

Radio Amateur **CALLBOOK** Magazine

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UNITED STATES SECTION

ALL K AND W CALLS

SPRING 1961

CURRENT UNTIL THE NEXT ISSUE, JUNE 1961

IN THIS ISSUE

6,860 NEW LICENSES ISSUED BY FCC SINCE THE WINTER 1960 CALLBOOK
24,000 CHANGES IN PREVIOUS LISTINGS
225,000 LICENSED RADIO AMATEURS

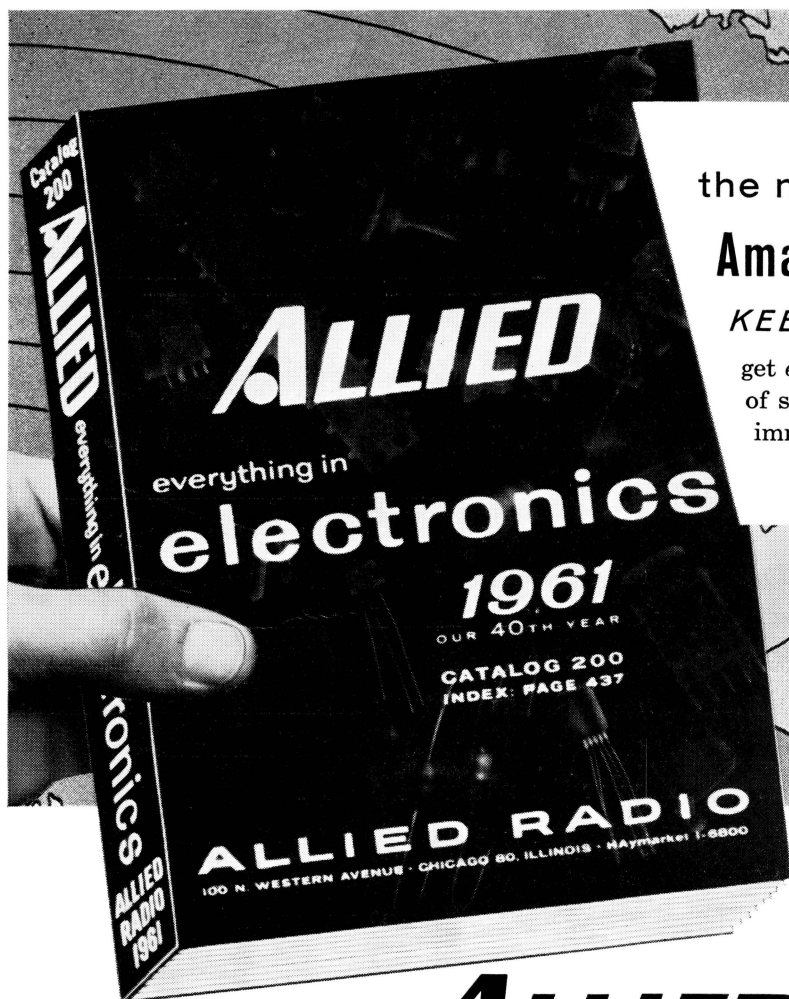
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Jack Schneider
(Allied's "Mr. Ham")



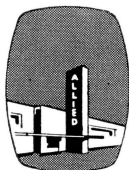
W9WHF
Jim Sommerville
(write to him
for that best deal)



W9BHD
Joe Huffman
(in the Ham Shack)



W9HLA
Joe Gizzi
(in the Ham Shack)



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Serving the Amateur for 40 Years

RADIO AMATEUR CALL BOOK

MAGAZINE

known the world over as the "CALLBOOK"

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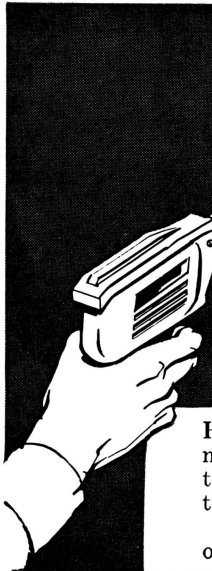
CHARLES O. STIMPSON, W9TRD

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Includes the States of Delaware, Maryland, Pennsylvania, and the District of Columbia.	
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Includes the States of Alabama, Florida, Georgia, Kentucky, North and South Carolina, Tennessee, and Virginia.	
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Includes the States of Arkansas, Louisiana, Mississippi, New Mexico, Oklahoma and Texas.	
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Includes the States of Arizona, Idaho, Montana, Nevada, Oregon, Utah, Washington and Wyoming.	
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Very Hot News . . . from hallicrafters

*Two great new kits...a complete, high-performance AM/CW station,
from the world's most experienced designers of short wave equipment*

HALLIKITS, we call them—a completely new concept of kit engineering that brings to your workshop, for the first time, these two outstanding advantages:

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tories; and *second*, production-line proof of "Constructability" *before you buy*.

Have a wonderful time! Save a bundle of money! End up with a station the most experienced amateur would be proud to call his own.



HT-40 TRANSMITTER, \$79.95

A perfect match for the handsome SX-140, both in quality and appearance. Hallicrafters' transmitter leadership is evident in every precision-engineered feature of this crystal-controlled 75-watt beauty—features as important to old-timers as they are to novices.

- **FEATURES:** You get excellent CW performance as well as AM. Full band switching, 80 through 6 meters. Enjoy easy tune-up and crisp, clean styling that has efficient operation as well as appearance in mind. Unit is fully metered, TVI filtered.
- **SPECIFICATIONS:** Maximum D.C. power input: 75 watts. Power output in excess of 35 watts CW, 30 watts peak AM phone. (Slightly less on 6 meters.) Frequency bands: 80, 40, 20, 15, 10 and 6 meters.
- **TUBES AND FUNCTIONS:** 6DQ5 power output; 6CX8 crystal oscillator and driver; 12AX7 speech amplifier; 6DE7 modulator; silicon high voltage rectifiers.
- **FRONT PANEL:** Function (AC off, tune, standby, AM, CW); Band Selector (80, 40, 20, 15, 10, 6); Drive control; Plate tuning, plate loading, Crystal-V.F.O.; Grid Current; Meter; AC indicator light; RF output.
- **REAR CHASSIS:** Microphone gain; antenna co-ax connector; remote control terminals; AC power cord.



SX-140 RECEIVER, \$94.95

Doesn't it make sense to team up your skill with the experience of a company who has designed and built more high-performance receivers than any other in the world? Especially when the result is the *lowest-priced amateur band receiver available?*

- **FEATURES:** You get complete coverage of all amateur bands 80 through 6 meters, with extremely high sensitivity and sharp selectivity. Unit has RF stage; S-meter; antenna trimmer; and XTAL calibrator. Tuning ratio is 25 to 1.
- **CONTROLS:** Tuning; Antenna Trimmer; Cal. Reset; Function (AC off, standby, AM, CW-SSB); Band Selector; Cal. on/off; RF Gain; Auto. Noise Limiter on/off; Selectivity/BFO; Audio Gain; phone jack; S-meter Adj.
- **TUBES AND FUNCTIONS:** 6AZ8 tuned RF amplifier and crystal calibrator; 6U8 oscillator and mixer; 6BA6 1650 kc. IF amplifier and BFO; 6T8A 2nd detector, A.V.C., ANL and 1st audio; 6AW8A audio power amplifier and S-meter amplifier; (2) silicon high voltage rectifiers.

P.S. *Both units are available fully wired, and tested. SX-140, \$109.95. HT-40, \$99.95.*

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Export Sales: International Div., Raytheon Co., Waltham, Mass. Canada: Gould Sales Co., Montreal, P.Q.

A. R. R. L. COUNTRIES LIST

Official List for ARRL DX CONTEST and Postwar DXCC

The ARRL Postwar Countries List is the official standard used in connection with the ARRL DX competition and the DX Century Club. To qualify for the DX Century Club Award, an applicant must submit confirmations from at least 100 different countries contacted after November 15, 1945, in accordance with the Postwar DXCC Rules. Copies of the DXCC Rules will be furnished by ARRL on request.

AC3	Sikkim	KC4	(See CE9)	VP2	St. Vincent & Dependencies
AC4	Tibet	KC4	Navassa Island	VP3	British Guiana
AC5	Bhutan	KC6	Eastern Caroline Islands	VP4	Trinidad & Tobago
AP	Pakistan	KC6	Western Caroline Islands	VP5	Cayman Islands
BV	Formosa	KG1	(See OX)	VP5	Jamaica
BY	China	KG4	Guantanamo Bay	VP5	Turks & Caicos Islands
C9	Manchuria	KG6	Marcus Island	VP6	Barbados
CE	Chile	KG6	Mariana Islands	VP7	Bahama Islands
CE9AA-AM, KC4, LU-Z, VKφ, VP8, ZL5	Antarctica	KG6I	(See KAφ)	VP8	(See CE9)
CE9	(See VP8)	KH6	Hawaiian Islands	VP8	Falkland Islands
CEφA	Easter Island	KJ6	Johnston Island	VP8, LU-Z	South Georgia Islands
CEφZ	Juan Fernandez Archipelago	KM6	Midway Islands	VP8, LU-Z	South Orkney Islands
CM, CO	Cuba	KP4	Puerto Rico	VP8, LU-Z	South Sandwich Islands
CN2, CN8, CN9	Morocco	KP6	Palmyra Group, Jarvis Island	VP8, LU-Z, CE9AN-AZ	South Shetland Islands
CP	Bolivia	KR6	Ryukyu Islands	VP9	Bermuda Islands
CR4	Cape Verde Islands	KS4	Serrana Bank & Roncador Cay	VQ1	Zanzibar
CR5	Portuguese Guinea	KS4	Swan Islands	VQ2	Northern Rhodesia
CR5	Principe, Sao Thome	KS6	American Samoa	VQ3	Tanganyika Territory
CR6	Angola	KV4	Virgin Islands	VQ4	Kenya
CR7	Mozambique	KW6	Wake Island	VQ5	Uganda
CR8	Goa (Portuguese India)	KX6	Marshall Islands	VQ8	Cargadas Carajos
CR9	Macao	KZ5	Canal Zone	VQ8	Chagos Islands
CR10	Portuguese Timor	LA	Jan Mayen	VQ8	Mauritius
CT1	Portugal	LA	Norway	VQ8	Rodriguez Island
CT2	Azores	LA	Svalbard	VQ9	Seychelles
CT3	Madeira Islands	LU	Argentina	VR1	British Phoenix Islands
CX	Uruguay	LU-Z	(See CE9)	VR1	Gilbert & Ellice Islands & Ocean Island
DJ, DL, DM	Germany	LX	Luxembourg	VR2	Fiji Islands
DU	Philippine Islands	LZ	Bulgaria	VR3	Fanning & Christmas Islands
EA	Spain	M1	San Marino	VR4	Solomon Islands
EA6	Balearic Islands	MP4	Bahrein	VR5	Tonga Islands
EA8	Canary Islands	MP4	Qatar	VR6	Pitcairn Island
EA9	Ifni	MP4	Trucial Oman	VS1	Singapore
EA9	Rio de Oro	OA	Peru	VS4	Sarawak
EA9	Spanish Morocco	OD5	Lebanon	VS5	Brunei
EAφ	Spanish Guinea	OE	Austria	VS6	Hong Kong
EI	Republic of Ireland	OH	Finland	VS9	Aden & Socotra
EL	Liberia	OHφ	Aland Islands	VS9	Maldives Islands
EP, EQ	Iran	OK	Czechoslovakia	VS9	Sultanate of Oman
ET2	Eritrea	ON4	Belgium	VU	Andaman and Nicobar Islands
ET3	Ethiopia	OX, KG1	Greenland	VU	India
F	France	OY	Faeroes	VU	Laccadive Islands
FA	Algeria	OZ	Denmark	XE, XF	Mexico
FB8	Amsterdam & St. Paul Islands	PAφ, PI1	Netherlands	XE4	Revilla Gigedo
FB8	Comoro Islands	PJ	Netherlands West Indies	XZ2	Burma
FB8	Kerguelen Islands	PJ2M	Sint Maarten	YA	Afghanistan
FB8	Malagasy Republic	PX	Andorra	YI	Iraq
FB8	Tromelin Island	PY	Brazil	YJ	(See FU8)
FC (Unofficial)	Corsica	PYφ	Fernando de Noronha	YK	Syria
FD	Togo	PYφ	Trindade & Martim Vaz Islands	YN, YNφ	Nicaragua
FE8	Cameroons	PZ1	Netherlands Guiana	YO	Roumania
FF	Dahomey Republic	SL, SM	Sweden	YS	Salvador
FF	Mali Republic	SP	Poland	YU	Yugoslavia
FF	Niger Republic	ST2	Sudan	YV	Venezuela
FF	Senegal Republic	SU	Egypt	YVφ	Aves Island
FF	Voltaic Republic	SV	Crete	ZA	Albania
FF4	Ivory Coast	SV	Dodecanese	ZB1	Malta
FF7	Mauritania	SV	Greece	ZB2	Gibraltar
FG7	Guadeloupe	TA	Turkey	ZC4	Cyprus
FK8	New Caledonia	TF	Iceland	ZC5	British North Borneo
FL8	French Somaliland	TG	Guatemala	ZC6	Palestine
FM7	Martinique	TI	Costa Rica	ZD1	Sierra Leone
FO8	Clipperton Island	TI9	Cocos Island	ZD2	Nigeria
FO8	French Oceania	UA1-6, UN1	European Russian	ZD3	Gambia
FP8	St. Pierre & Miquelon Islands	UA1	Socialist Federated Soviet Republic	ZD6	Nyasaland
FQ	Central African Rep.	UA2	Franz Josef Land	ZD7	St. Helena
FQ	Chad Republic	UA9, φ	Kaliningradsk	ZD8	Ascension Island
FQ	Congo Republic	UB5	Asiatic Russian S.F.S.R.	ZD9	Tristan da Cunha & Gough Island
FQ	Gabon Republic	UC2	Ukraine	ZE	Southern Rhodesia
FS7	Reunion Island	UD6	White Russian Soviet Socialist Republic	ZK1	Cook Islands
FS7	Saint Martin	UF6	Azerbaijan	ZK1	Manihiki Islands
FU8, YJ1	New Hebrides	UG6	Georgia	ZK2	Niue
FW8	Wallis & Futuna Islands	UH8	Turkoman	ZL	Auckland & Campbell Islands
FY7	French Guiana & Inini	UI8	Uzbek	ZL	Chatham Islands
G	England	UJ8	Tadzhik	ZL	Kermadec Islands
GC	Channel Islands	UL7	Kazakh	ZL	New Zealand
GD	Isle of Man	UM8	Kirghiz	ZL5	(See CE9)
GI	Northern Ireland	UO5	Moldavia	ZM6	British Samoa
GM	Scotland	UP2	Lithuania	ZM7	Tokelaus
GW	Wales	UQ2	Latvia	ZP	Paraguay
HA	Hungary	UR2	Estonia	ZS1, 2, 4, 5, 6	Union of South Africa
HB	Switzerland	VK	Australia (including Tasmania)	ZS2	Prince Edward & Marion Islands
HC	Ecuador	VK	Lord Howe Island	ZS3	Southwest Africa
HC8	Galapagos Islands	VK9	Willis Islands	ZS7	Swaziland
HE	Liechtenstein	VK9	Christmas Island	ZS8	Basutoland
HH	Haiti	VK9	Cocos Islands	ZS9	Bechuanaland
HI	Dominican Republic	VK9	Nauru Island	3A	Monaco
HK	Colombia	VK9	Norfolk Island	3V8	Tunisia
HKφ	San Andres and Providencia	VK9	Papua Territory	4S7	Ceylon
HM, HL9	Korea	VK9	Territory of New Guinea	4W1	Yemen
HP	Panama	VKφ	(See CE9)	4X4	Israel
HR	Honduras	VKφ	Heard Island	5A	Libya
HS	Thailand	VKφ	Macquarie Island	6O2	Somali Republic
HV	Vatican City	VPI	British Honduras	7G1	Republic of Guinea
HZ	Saudi Arabia (Hedjaz & Nejd)	VP2	Anguilla	9G1	Ghana
II, IT1	Italy	VP2	Antigua, Barbuda	9K2	Kuwait
IS1	Sardinia	VP2	British Virgin Islands	9M2	Malaya
JA, KA	Japan	VP2	Dominica	9N1	Nepal
JT1	Mongolia	VP2	Grenada & Dependencies	9Q5	Republic of the Congo
JY	Jordan	VP2	Montserrat	9U5	Ruanda-Urundi
JZφ	Netherlands New Guinea	VP2	St. Kitts, Nevis		Aldabra Islands
KA	(See JA)	VP2	St. Lucia		
KAφ, KG6I	Bonin & Volcano Islands				
KB6	Baker, Howland & American Phoenix Islands				

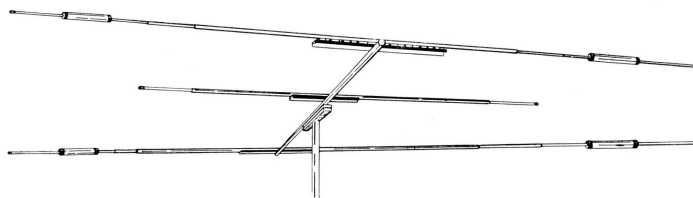
1+1=NEW!

TWO NEW ANTENNAS FROM MOSLEY

Yes . . . NEW! The latest result of research by the excellent engineering staff of growing Mosley Electronics, Incorporated.

Built for those radio amateurs who will not accept less than the finest, these antennas are just two models in the most complete line of amateur communication arrays in the world - designed, engineered and manufactured by Mosley!

TA-20-40



An extraordinary antenna, the Mosley TA-20-40 offers performance to satisfy the perfectionist. Frequency selection is accomplished by means of exclusive design, high impedance parallel-resonant "trap-circuits". Automatic band selection is achieved by a simple phasing network that permits fewer elements with a consequent reduction in weight and wind load. Fully rust and corrosion proof, frequency stability in all weather, and operation at maximum legal amateur power are but a few of the exclusive design and construction features.

Amateur Net, \$337.50

autowhip TM-5 for 10-15-20-40-80

. . . the 5 band mobile antenna with excellent radiating efficiency that changes bands without switches! Fully automatic electronic switching by means of simple series and parallel resonant trap circuits. These precision made, series-tuned traps improve SWR on the 10-15-20 and 40 meter bands and a parallel network achieves near unity on 80 meters. Team the TM-5 with your 5 band mobile transmitter or transceiver for mobile operation at its best!

Amateur Net, \$69.95

Mosley Electronics, Inc. 4610 N. LINDBERGH BLVD., BRIDGETON, MISSOURI

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Los Angeles 15, California

INTERNATIONAL DIVISION
15 Moore Street
New York 4, New York

INTERNATIONAL RADIO AMATEUR PREFIXES

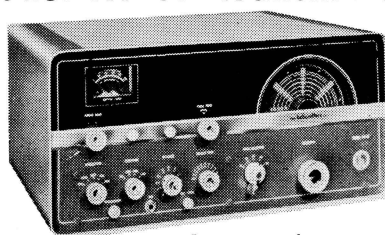
The following prefixes are listed in alphabetical order for convenience in locating the country when DX calls are heard.

AC3	SIKKIM	KA	U. S. PERSONNEL IN JAPAN	VK9	PAPUA TERRITORY
AC4	TIBET	KA ϕ	IWO JIMA ISLAND	VO1	NEWFOUNDLAND
AC5	BHUTAN	KB6	BAKER, CANTON, ENDERBURY, HOWLAND & PHOENIX ISLANDS	VO2	LABRADOR
AP	PAKISTAN	KC4US	ANTARTICA	VP1	BRITISH HONDURAS
BV	FORMOSA	KC6	CAROLINE ISLANDS	VP2	FEDERATION OF BRITISH TERRITORIES IN THE CARIBBEAN
BY, (C)	CHINA	KG1	U. S. PERSONNEL IN GREENLAND	VP3	BRITISH GUIANA
C9	MANCHURIA	KG4	GUANTANAMO BAY, CUBA	VP4	TRINIDAD & TOBAGO IS.
CE	CHILE	KG6	MARIANAS ISLANDS (Guam)	VP5	JAMAICA, CAYMAN, TURKS & CAICOS IS.
CM-CO	CUBA	KG6I	BONIN ISLANDS	VP6	BARBADOS
CN	MOROCCO	KG6S	SAIPAN ISLAND	VP7	BAHAMA ISLANDS
CN9	MOROCCO (Zona Norte)	KG6T	TINIAN ISLAND	VP8	FALKLAND ISLANDS South Georgia, South Orkney and South Shetland Islands.
CP	BOLIVIA	KH6	HAWAIIAN ISLANDS	VP9	BERMUDA ISLANDS
CR4	CAPE VERDE ISLANDS	KJ6	JOHNSTON ISLAND	VQ1	ZANZIBAR
CR5	PORTUGUESE GUINEA	KL7	ALASKA	VQ2	NORTHERN RHODESIA
CR6	ANGOLA	KM6	MIDWAY ISLAND	VQ3	TANGANYIKA
CR7	MOZAMBIQUE	KP4	PUERTO RICO	VQ4	KENYA
CR8	GOA (Portuguese India)	KP6	PALMYRA & JARVIS ISLANDS	VQ5	UGANDA
CR9	MACAO	KR6	RYUKYU ISLANDS	VQ8	CHAGOS & MAURITIUS ISLANDS
CR10	TIMOR ISLAND (Port.)	KS4	SWAN ISLAND	VQ9	SEYCHELLES
CT1	PORTUGAL	KS6	U. S. SAMOA	VR1	GILBERT, ELLICE & OCEAN ISLANDS
CT2	AZORES ISLANDS	KV4	VIRGIN ISLANDS	VR2	FIJI ISLANDS
CT3	MADEIRA ISLANDS	KW6	WAKE ISLAND	VR3	LINE ISLANDS
CX	URUGUAY	KX6	MARSHALL ISLANDS	VR4	SOLOMON ISLANDS
DL	GERMANY	KZ5	CANAL ZONE	VR5	TONGA (Friendly) ISLAND
DU	PHILIPPINE ISLANDS	LA	NORWAY	VR6	PITCAIRN ISLAND
EA	SPAIN	LU	ARGENTINA	VS1	SINGAPORE
EA6	BALEARIC ISLANDS	LX	LUXEMBOURG	VS4	SARAWAK
EA8	CANARY ISLANDS	LZ	BULGARIA	VSS	BRUNEI
EA9	SPANISH SAHARA	M1	SAN MARINO	VS6	HONG KONG
EA ϕ	SPANISH GUINEA	MP4	MASQAT & OMAN	VS9	ADEN & SOCATRA ISLANDS
EI	IRELAND	OA	PERU	VU	INDIA
EL	LIBERIA	OD5	LEBANON	VU4	LACCADIVE ISLANDS
EP	IRAN	OE	AUSTRIA	VU5	ANDAMAN ISLANDS
ET2	ERITREA	OH	FINLAND	W	UNITED STATES
ET3	ETHIOPIA	OH ϕ	ALAND ISLANDS	XE	MEXICO
F	FRANCE	OK	CZECHOSLOVAKIA	XW8	LAOS
FA	ALGERIA	ON	BELGIUM	XZ	BURMA
FB8	MADAGASCAR	OX	GREENLAND	YA	AFGHANISTAN
FC	CORSICA	OY	FAEROES ISLANDS	YI	IRAQ
FD8	TOGO	OZ	DENMARK	YJ	NEW HEBRIDES
FE8	CAMEROONS	PA, PI	NETHERLANDS	YK	SYRIA
FF4	IVORY COAST	PJ	NETHERLANDS ANTILLES	YN	NICARAGUA
FF5	DAHOMY	PK	INDONESIA	YO	RUMANIA
FF6	UPPER VOLTA	PX	ANDORRA	YS	EL SALVADOR
FF7	MAURITANIA	PY	BRAZIL	YT, YU	YUGOSLAVIA
FF8	MALI REPUBLIC	PY ϕ	TRINDADE & MARTIM ISLANDS	YV	VENEZUELA
FF9	NIGER	PZ	SURINAM	ZA	ALBANIA
FG7	GUADELOUPE	SL, SM	SWEDEN	ZB1	MALTA
FK8	NEW CALEDONIA	SP	POLAND	ZB2	GIBRALTAR
FL8	FRENCH SOMALILAND	ST	SUDAN	ZC3	CHRISTMAS ISLAND
FM7	MARTINIQUE	SU	EGYPT	ZC4	CYPRUS
FO8	FRENCH OCEANIA	SV	CRETE & GREECE	ZC5	BRITISH NORTH BORNEO
FP8	MIQUELON & ST. PIERRE IS.	SV5	DODECANESE ISLANDS	ZD1	SIERRA LEONE
FQ8	MIDDLE CONGO	TA	TURKEY	ZD2	NIGERIA
FR7	REUNION ISLAND	TF	ICELAND	ZD3	GAMBIA
FS7	SAINT MARTIN	TG	GUATEMALA	ZD6	NYASALAND
FU8	NEW HEBRIDES	TI	COSTA RICA	ZD7	SAINT HELENA
FW8	WALLIS & FUTUNA ISLANDS	TI9	COCOS ISLAND	ZD8	ASCENSION ISLAND
FY7	FRENCH GUIANA	UA1-3-4-6	EUROPEAN RUSSIAN SOCIALIST FEDERATED SOVIET REPUBLIC	ZD9	TRISTAN DA CUNHA & GOUGH ISLANDS
G	ENGLAND	UA9- ϕ	ASIATIC RUSSIAN S. F. S. R.	ZE	SOUTHERN RHODESIA
GC	CHANNEL ISLANDS	UB5	UKRAINE	ZK1	COOK ISLANDS
GD	ISLE OF MAN	UC2	WHITE RUSSIAN S.S.R.	ZK2	NIUE
GI	NORTHERN IRELAND	UD6	AZERBAIJAN	ZL	NEW ZEALAND
GM	SCOTLAND	UF6	GEORGIA	ZL1	KERMADEC
GW	WALES	UG6	ARMENIA	ZM	WESTERN SAMOA
HA	HUNGARY	UH8	TURKOMAN	ZP	PARAGUAY
HB	SWITZERLAND	UJ8	UZBEK	ZS	UNION OF SOUTH AFRICA
HC	ECUADOR	UL7	TADZHIK	ZS3	SOUTHWEST AFRICA
HC8	GALAPAGOS ISLANDS	UM8	KAZAKH	ZS7	SWAZILAND
HE9L	LIECHTENSTEIN	UN1	KIRELO-FINNISH REPUBLIC	ZS8	BASUTOLAND
HH	HAITI	UO5	MOLDAVIA	ZS9	BECHUANALAND
HI	DOMINICAN REPUBLIC	UP	LITHUANIA	3A2	MONACO
HK	COLOMBIA	UQ	LATVIA	3V8	TUNISIA
HM, HL9	KOREA	UR	ESTONIA	3W8	VIETNAM
HP	PANAMA	VE	CANADA	4S7	CEYLON
HR	HONDURAS	VK	AUSTRALIA	4W1	YEMEN
HS	THAILAND	VK2	LORD HOWE ISLAND	4X4	ISRAEL
HV	VATICAN CITY	VK7	TASMANIA	5A	LIBYA
HZ	SAUDI ARABIA			6O	SOMALI REPUBLIC
I	ITALY			7G1	REPUBLIC OF GUINEA
IS	SARDINIA			9G1	GHANA
IT	SICILY			9K2	KUWAIT
JA	JAPAN			9M2	FEDERATION OF MALAYA
JT1	MONGOLIA			9N1	NEPAL
JY	JORDAN			9Q5	CONGO REPUBLIC
JZ ϕ	NETHERLANDS NEW GUINEA			9U5	RUANDA-URUNDI
K	UNITED STATES				

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PREFIXES—BY COUNTRIES

The following countries listed in alphabetical order by country show international radio amateur prefixes. Characters in () designate the continent and zone in which the country is located. Abbreviations are as follows: A—Asia, AF—Africa, E—Europe, NA—North America, O—Oceania, SA—South America.

ADEN (A-21) VS9	GUIANA, BRITISH (SA-9) VP3	QATAR (A-21) MP4
AFGHANISTAN (A-21) YA	GUIANA, FRENCH (SA-9) FY7	REUNION ISLAND (AF-39) F7
ALAND ISLANDS (E-14) OH0	GUIANA, NETHERLANDS (SA-9) PZ	REVILLA GIGEDO (NA-6) XE4
ALASKA (NA-1) KL7	GUINEA, PORTUGUESE (AF-35) CR5	RHODESIA, NORTHERN (AF-36) VQ2
ALBANIA (E-15) ZA	GUINEA, REPUBLIC OF (AF-35) 7G1	RHODESIA, SOUTHERN (AF-38) ZE
ALGERIA (AF-33) FA	HAITI (NA-8) HH	RIO DE ORO (A-33) EA9
AMSTERDAM & ST. PAUL IS. (AF-39) FB8	HAWAIIAN ISLANDS (O-31) KH6	RODRIGUEZ ISLAND (AF-39) VQ8
ANDAMAN & NICOBAR ISLANDS (A-26) VU5	HEARD ISLAND (O-39) VK0	RUANDA-URUNDI (A-36) 9U5
ANDORRA (E-14) PX	HONDURAS (NA-7) HR	RUMANIA (E-20) YO
ANGLO-EGYPTIAN SUDAN (AF-34) ST	HONG KONG (A-24) VS6	RYUKYU ISLANDS (A-25) KR6
ANGOLA (AF-36) CR6	HOWLAND ISLAND (O-31) KB6	SAINT HELENA (AF-36) ZD7
ANGUILLA (NA-8) VP2	HUNGARY (E-15) HA	SAINT KITTS, NEVIS (NA-8) VP2
ANTARTICA (SA-13) KC4US	ICELAND (E-40) TF	SAINT LUCIA (NA-8) VP2
ANTIGUA, BARBUDA (NA-8) VP2	IFNI (A-33) EA9	SAINT MARTIN (NA-8) FS7
ARGENTINA (SA-13) LU	INDIA (A-22) VU	SAINT PIERRE ISLAND (NA-5) FP8
ASCENSION ISLAND (AF-36) ZD8	INDONESIA (A-28) PK	SAINT VINCENT & DEPENDENCIES (NA-8) VP2
AUSTRALIA (O-29 & 30) VK	IRAN (A-21) EP	SAIPAN ISLAND (O-27) KG6S
AUSTRIA (E-15) OE	IRAQ (A-21) YI	SALVADOR (NA-7) YS
AZORES ISLANDS (E-14) CT2	IRELAND (E-14) EI	SAMOA (U.S.) (O-32) KS6
BAHAMA ISLANDS (NA-8) VP7	ISLE OF MAN (E-14) GD	SAMOA (Western) (O-32) ZM
BAHRAIN ISLANDS (A-21) MP4	ISRAEL (A-20) 4X4	SAN ANDRES & PROVIDENCIA (NA-7) HK0
BAKER ISLAND (O-31) KB6	ITALY (E-15) I	SAN MARINO (E-15) M1
BALEARIC ISLANDS (E-14) EA6	IVORY COAST (AF-35) FF4	SARAWAK (O-28) VS4
BARBADOS (NA-8) VP6	IWO JIMA ISLAND (O-27) KA0	SARDINIA (E-15) IS
BASUTOLAND (AF-38) ZS8	JAMAICA (NA-8) VP5	SAUDI ARABIA (A-21) HZ
BECHUANALAND (AF-38) ZS9	JAN MAYEN ISLAND (E-40) OY	SCOTLAND (E-14) GM
BELGIUM (E-14) ON	JAPAN (A-25) JA	SERRANA BANK & RONCADOR CAY (NA-7) KS4B
BERMUDA ISLANDS (NA-5) VP9	JARVIS ISLAND (O-31) KP6	SEYCHELLES (AF-39) VQ9
BHUTAN (A-22) AC5	JOHNSTON ISLAND (O-31) KJ6	SICILY (E-15) IT
BOLIVIA (SA-10) CP	JORDAN (A-20) JY	SIERRA LEONE (AF-35) ZD1
BONIN & VOLCANO ISLANDS (O-27) KA0, KG6I	JUAN FERNANDEZ ARCHIPELAGO (SA-12) CE0Z	SIKKIM (A-22) AC3
BRAZIL (SA-11) PY	KENYA (AF-37) VQ4	SINGAPORE (A-28) VS1
BRITISH GUIANA (SA-9) VP3	KERGUELEN ISLANDS (AF-39) FB8	SINT MAARTEN (NA-8) PJ2M
BRITISH HONDURAS (NA-7) VP1	KERMADEC ISLANDS (O-32) ZL1	SOCOTRA ISLAND (A-37) VS9
BRITISH NORTH BORNEO (A-28) ZC5	KOREA (A-25) HM	SOLOMON ISLANDS (O-28) VR4
BRITISH PHOENIX ISLANDS (O-31) VR1	KUWAIT (A-21) 9K2	SOMALI REPUBLIC (AF-37) 6O
BRITISH TERRITORIES IN THE CARIBBEAN, FED. OF (NA-8) VP2	LABRADOR (NA-2) VO2	SOMALILAND, French (AF-37) FL8
BRITISH VIRGIN ISLANDS (NA-8) VP2	LAOS (A-22) VU4	SOUTH GEORGIA (SA-13) VP8
BRUNEI (O-28) VS5	LACADIVE ISLANDS (A-26) XW8	SOUTH ORKNEY ISLANDS (SA-13) VP8
BULGARIA (E-20) LZ	LEBANON REPUBLIC (A-20) OD5	SOUTH SANDWICH ISLANDS (SA-13) VP8
BURMA (A-26) XZ	LEEWARD ISLANDS (NA-8) VP2	SOUTH SHETLAND ISLANDS (SA-13) VP8
CAMEROONS (AF-36) FE8	LIBERIA (AF-35) EL	SOUTHWEST AFRICA (AF-38) ZS3
CANADA (NA-1 to 5) VE	LIBYA (AF-34) SA	SOVIET UNION: EUROPEAN RUSSIAN SOCIALIST FEDERATED SOVIET REP. (E-16) UA1, 3, 4, 6
CANAL ZONE (NA-7) KZ5	LIECHTENSTEIN (E-14) HE9L	ASIATIC RUSSIAN S.F.S.R. (A-18, 19) UA9, 0
CANARY ISLANDS (AF-33) EA8	LINE ISLANDS (O-31) VR3	UKRAINE (E-16) UB5
CANTON ISLAND (O-31) KB6	LITTLE AMERICA (SA-13) KC4	WHITE RUSSIAN S.S.R. (E-16) UC2
CAPE VERDE ISLANDS (AF-35) CR4	LORD HOWE ISLAND (O-30) VK2	AZERBAIJAN (E-21) UD6
CAROLINE ISLANDS (O-27) KC6	LUXEMBOURG (E-14) LX	GEORGIA (E-21) UF6
CAYMAN ISLANDS (NA-8) VP5	MACAO (A-24) CR9	ARMENIA (E-21) UG6
CELEBES & MOLUCCA ISLANDS (A-28) PK6	MACQUARIE ISLAND (O-30) VK0	TURKOMAN (A-17) UH8
CEYLON (A-22) 4S7	MADAGASCAR (AF-39) FB8	UZBEK (A-17) UI8
CHAGOS ISLANDS (AF-39) VQ8	MADIRA ISLANDS (AF-33) CT3	TADZHIK (A-17) UJ8
CHANNEL ISLANDS (E-14) GC	MALAYA, FEDERATION OF (A-28) 9M2	KAZAKH (A-17) UL7
CHILE (SA-12) CE	MALDIVE ISLANDS (A-22) VS9	KIRGHIZ (A-17) UM8
CHINA (A-23 & 24) C	MALI REPUBLIC (Senegal) (AF-35) FF8	KARELO-FINNISH REP. (E-16) UN1
CHRISTMAS ISLAND (O-29) ZC3	MALTA (E-15) ZB1	MOLDAVIA (E-16) UO5
CLIPPERTON ISLAND (NA-7) FO8	MANCHURIA (A-24) C9	LITHUANIA (E-15) UP
COCOS ISLAND (NA-7) TI9	MARIANAS ISLANDS (Guam) (O-27) KG6	LATVIA (E-15) UQ
COLOMBIA (SA-9) HK	MARSHALL ISLANDS (O-31) XK6	ESTONIA (E-15) UR
COMORO ISLANDS (AF-39) FB8	MARTINIQUE (NA-8) FM7	SPAIN (E-14) EA
CONGO, MIDDLE (AF-36) FO8	MASOAT & OMAN (A-21) MP4	SPANISH GUINEA (AF-36) EA0
CONGO REPUBLIC (AF-36) 9Q5	MAURITANIA (AF-35) FF7	SPANISH SAHARA (A-33) EA9
COOK ISLANDS (O-32) ZK1	MAURITIUS (AF-39) VQ8	SUDAN (AF-34) ST
CORSICA (E-15) FC	MEXICO (NA-6) XE	SUMATRA (A-28) PK4
COSTA RICA (NA-7) TI	MIDWAY ISLAND (O-31) KM6	SURINAM (SA-9) PZ
CRETE (E-20) SV	MIQUELON ISLAND (NA-5) FP8	SVALBARD (NA-40) LA
CUBA (NA-8) CM, CO	MONACO (E-14) 3A2	SWAN ISLAND (NA-7) KS4
CYPRUS (A-20) ZC4	MONGOLIA (A-23) JT1	SWAZILAND (AF-38) ZS7
CZECHOSLOVAKIA (E-15) OK	MONTERRAT (NA-8) VP2	SWEDEN (E-14) SL, SM
DAHOMY (AF-35) FF5	MOROCCO (AF-33) CN	SWITZERLAND (E-14) HB
DENMARK (E-14) OZ	MOROCCO (Zona Norte) (AF-33) CN9	SYRIA (A-20) YK
DODECANESE ISLANDS (E-20) SV5	MOZAMBIQUE (AF-37) CR7	TANGANYIKA (AF-37) VQ3
DOMINICA (NA-8) VP2	NAURU ISLAND (O-31) VK9	TASMANIA (O-30) VK7
DOMINICAN REPUBLIC (NA-8) HI	NAVASSA ISLAND (NA-8) KC4	THAILAND (A-26) HS
EASTER ISLAND (SA-12) CE0A	NEPAL (A-22) 9N1	TIBET (A-23) AC4
ECUADOR (SA-10) HC	NETHERLANDS (E-14) PA, PI	TIMOR, Portuguese (O-28) CR10
EGYPT (AF-34) SU	NETHERLANDS ANTILLES (SA-9) PJ	TINIAN ISLAND (O-27) KG6T
EL SALVADOR (NA-7) YS	NETHERLANDS BORNEO (A-28) PK5	TOGO (AF-35) FD8
ENDERBURY ISLAND (O-31) KB6	NETHERLANDS NEW GUINEA (A-28) JZ0	TONGA (Friendly) ISLANDS (O-32) VR5
ENGLAND (E-14) G	NEW CALEDONIA (O-32) FK8	TRIESTE (E-15) II
ERITREA (AF-37) ET2	NEWFOUNDLAND (NA-5) VO1	TRINIDAD & MARTIN ISLANDS (SA-11) PY0
ETHIOPIA (AF-37) ET3	NEW GUINEA, Territory of (O-28) VK9	TRINIDAD & TOBAGO (SA-9) VP4
FAEROES ISLANDS (E-14) OY	NEW HEBRIDES (O-32) FU8, YI	TRISTAN da CUNHA & GOUGH ISLANDS (AF-38) ZD9
FALKLAND ISLANDS (SA-13) VP8	NEW ZEALAND (O-32) ZL	TROMELIN ISLAND (AF-39) FB8
FANNING ISLAND (O-31) VR3	NICARAGUA (NA-7) YN	TRUCIAL OMAN (A-21) MP4
FERNANDO DE NORONHA (SA-11) PY0	NIGER (AF-35) FF9	TUNISIA (AF-33) 3V8
FII ISLANDS (O-32) VR2	NIGERIA (AF-35) ZD2	TURKEY (A-20) TA
FINLAND (E-15) OH	NIUE (O-32) ZK2	TURKS & CAICOS ISLANDS (NA-8) VP5
FORMOSA (A-24) BV	NORFOLK ISLAND (O-32) VK9	UGANDA (AF-37) VQ5
FRANCE (E-14) F	NORTHERN IRELAND (E-14) GI	UNION OF SOUTH AFRICA (AF-38) ZS
FRENCH CAMEROONS (AF-36) FE8	NORWAY (E-14) LA	UNITED STATES of AMERICA (NA-3, 4, 5) W, K
FRENCH GUIANA (SA-9) FY7	NYASALAND (AF-37) ZD6	UPPER VOLTA (AF-35) FF6
FRENCH OCEANIA (O-32) FO8	OKINAWA (A-25) KR6	URUGUAY (SA-13) CX
FRENCH SOMALILAND (A-37) FL8	OMAN (A-21) MP4	VATICAN CITY (E-15) HV
GALAPAGOS ISLANDS (SA-10) HC8	PAKISTAN (A-21, 22) AP	VENEZUELA (SA-9) VV
GAMBIA (AF-35) ZD3	PALMYRA ISLANDS (O-31) KP6	VIETNAM (A-26) 3W8
GERMANY (E-14) DL	PANAMA (NA-7) HP	VIRGIN ISLANDS (NA-8) KV4
GHANA (AF-35) 9G1	PAPUA TERRITORY (O-28) VK9	WAKE ISLAND (O-31) KW6
GIBRALTAR (E-14) ZB2	PARAGUAY (SA-11) ZP	WALES (E-14) GW
GILBERT ISLANDS (O-31) VR1	PERU (SA-10) OA	WALLIS & FUTUNA ISLANDS (O-32) FW8
GOA (Portuguese India) (A-22) CR8	PHILIPPINE ISLANDS (O-27) DU	WINDWARD ISLANDS (NA-8) VP2
GREECE (E-20) SV	PHOENIX ISLANDS (O-31) KB6	YEMEN (A-21) 4W1
GREENLAND (NA-40) OX	PITCAIRN ISLAND (O-32) VR6	YUGOSLAVIA (E-15) YT, YU
GUADELOUPE (NA-8) FG7	POLAND (E-15) SP	ZANZIBAR (AF-37) VQ1
GUAM (O-27) KG6	PORTUGAL (E-14) CT1	
GUANTANAMO BAY (NA-8) KG4	PORTUGUESE GUINEA (A-35) CR5	
GUATEMALA (NA-7) TG	PRINCE EDWARD & MARION ISLANDS (AF-38) ZS2	
	PUERTO RICO (NA-8) KP4	

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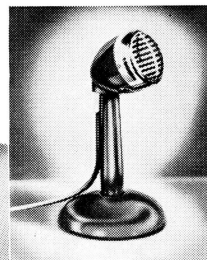
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First class rates are the rate for the first ounce. If the rate indicated is 8¢, add 5¢ for each additional ounce or fraction; if the rate indicated is 4¢, add 4¢ for each additional ounce or fraction.

Air mail rates are the rate for each half ounce, except where indicated.

International reply coupons may be purchased at any United States Post Office. Upon presentation at a post office in any country, these coupons are convertible into postage stamps of that country. The column marked "RP" shows the number of international reply coupons required to prepay an air mail letter of the first weight unit from the countries indicated to the United States.

COUNTRY	QSL cards	First class	Air mail	RP	COUNTRY	QSL cards	First class	Air mail	RP	COUNTRY	QSL cards	First class	Air mail	RP
ADEN	.05	\$.08	\$.25	9	GAMBIA	.05	.08	.25	9	OKINAWA	.05	.08	.25	5
AFGHANISTAN	.05	.08	.25	5	GERMANY	.05	.08	.15	2	PAKISTAN	.05	.08	.25	5
ALASKA	.03	.04	.07*		GHANA	.05	.08	.25	6	PALESTINE	.05	.08	.25	
ALBANIA	.05	.08	.15	2	GIBRALTAR	.05	.08	.15	3	PANAMA	.05	.08	.10	2
ALGERIA	.05	.08	.15	3	GILBERT & ELLICE IS.	.05	.08	.25	5	PAPUA	.05	.08	.25	4
ANDORRA	.05	.08	.15	8	GREECE	.05	.08	.15	2	PARAGUAY	.05	.08	.10	3
ANGLO-EGYPTIAN SUDAN	.05	.08	.25	4	GREENLAND	.05	.08	.15		PERU	.05	.08	.10	8
ANGOLA	.05	.08	.25	3	GREENADA, BWI	.05	.08	.10	5	PHILIPPINE IS.	.05	.08	.25	3
ANGUILLA	.05	.08	.10	2	GRENADINES, BWI	.05	.08	.10	5	PITCAIRN ISLAND	.05	.08	.25	
ANTIGUA	.05	.08	.10	2	GUADELOUPE	.05	.08	.10	2	POLAND	.05	.08	.15	2
ARGENTINA	.05	.08	.10	5	GUAM	.03	.04	.07*		PORTUGAL	.05	.08	.15	2
ARUBA	.05	.08	.10	2	GUATEMALA	.05	.08	.10	2	PORT. EAST AFRICA	.05	.08	.25	3
ASCENSION ISLAND	.05	.08	.15		HAITI	.05	.08	.10	5	PORTUGUESE GUINEA	.05	.08	.25	2
AUSTRALIA	.05	.08	.25	4	HAWAII	.03	.04	.07*		PORTUGUESE INDIA	.05	.08	.25	4
AUSTRIA	.05	.08	.15	2	HONDURAS	.05	.08	.10	2	PORTUGUESE TIMOR	.05	.08	.25	4
AZORES	.05	.08	.15	2	HONG KONG	.05	.08	.25	5	PORTUGUESE W. AFRICA	.05	.08	.25	3
BAHAMAS	.05	.08	.10	2	HUNGARY	.05	.08	.15	3	PUERTO RICO	.03	.04	.07*	
BAHRAIN ISLANDS	.05	.08	.25	4	ICELAND	.05	.08	.15	2	REDONDA, BWI	.05	.08	.10	2
BALEARIC ISLANDS	.05	.08	.15	3	INDIA	.05	.08	.25	6	REUNION ISLAND	.05	.08	.25	3
BALUCHISTAN	.05	.08	.25	5	INDONESIA	.05	.08	.25	6	RIO DE ORO	.05	.08	.25	6
BARBADOS	.05	.08	.10	3	IRAN	.05	.08	.25	3	ROMANIA	.05	.08	.15	4
BARBUDA	.05	.08	.10	2	IRAQ	.05	.08	.25	3	RYUKYU ISLANDS	.05	.08	.25	5
BECHUANALAND	.05	.08	.25	6	IRELAND	.05	.08	.15	3	ST CHRISTOPHER, BWI	.05	.08	.10	3
BELGIAN CONGO	.05	.08	.25	2	ISRAEL	.05	.08	.25	4	ST HELENA	.05	.08	.25	3
BELGIUM	.05	.08	.15	2	ITALY	.05	.08	.15	2	ST KITS, BWI	.05	.08	.10	3
BERMUDA	.05	.08	.10	2	IVORY COAST	.05	.08	.25	2	ST LUCIA, BWI	.05	.08	.10	3
BOLIVIA	.05	.08	.10	2	JAMAICA	.05	.08	.10	2	ST PIERRE & MIQUELON	.05	.08	.08*	2
BRAZIL	.05	.08	.10	3	JAPAN	.05	.08	.25	3	ST VINCENT, BWI	.05	.08	.10	3
BRITISH CAMEROONS	.05	.08	.25	6	JORDAN	.05	.08	.25	4	SALVADOR	.05	.08	.10	2
BRITISH GUIANA	.05	.08	.10	2	KENYA & UGANDA	.05	.08	.25	7	SAMOA (Br.)	.05	.08	.25	6
BRITISH HONDURAS	.05	.08	.10	2	KOREA	.05	.08	.25	4	SAN MARINO	.05	.08	.15	2
BRITISH SOMALILAND	.05	.08	.25	8	LABUAN	.05	.08	.25	6	SANTA CRUZ ISLANDS	.05	.08	.25	
BR. VIRGIN ISLANDS	.05	.08	.10	3	LAOS	.05	.08	.25	3	SARAWAK	.05	.08	.25	6
BRUNEI	.05	.08	.25	7	LATVIA	.05	.08	.15	3	SAUDI ARABIA	.05	.08	.25	3
BULGARIA	.05	.08	.15	3	LEBANON	.05	.08	.25	3	SCOTLAND	.05	.08	.15	2
BURMA	.05	.08	.25	5	LIBERIA	.05	.08	.25	5	SENEGAL	.05	.08	.25	2
CANADA	.03	.04	.07*	2	LIBYA	.05	.08	.15	2	SEYCHELLES	.05	.08	.25	3
CANAL ZONE	.03	.04	.07*		LIECHENSTEIN	.05	.08	.15	2	SIERRA LEONE	.05	.08	.25	6
CANARY ISLANDS	.05	.08	.15	3	LITHUANIA	.05	.08	.15	3	SOLOMON ISLANDS	.05	.08	.25	8
CANTON ISLAND	.03	.04	.07*		LUXEMBOURG	.05	.08	.15	2	SOMALIA	.05	.08	.25	5
CAPE VERDE ISLANDS	.05	.08	.25	3	MACAO	.05	.08	.25	3	SOUTHERN RHODESIA	.05	.08	.25	7
CAYMAN ISLANDS	.05	.08	.10	3	MADAGASCAR	.05	.08	.25	3	SOUTHWEST AFRICA	.05	.08	.25	6
CEYLON	.05	.08	.25	5	MADEIRA ISLANDS	.05	.08	.15	3	SPAIN	.05	.08	.15	3
CHILE	.05	.08	.10	7	MALAYA	.05	.08	.25	6	SPANISH GUINEA	.05	.08	.25	9
CHINA	.05	.08	.25	3	MALTA	.05	.08	.15	6	SUDAN	.05	.08	.25	4
COLOMBIA	.05	.08	.10	5	MARTINIQUE	.05	.08	.10	2	SURINAM	.05	.08	.10	1
COOK ISLANDS	.05	.08	.25	6	MAURITANIA	.05	.08	.25	2	SWEDEN	.05	.08	.15	2
CORSICA	.05	.08	.15	2	MAURITIUS	.05	.08	.25	4	SWITZERLAND	.05	.08	.15	2
COSTA RICA	.05	.08	.10	3	MEXICO	.03	.04	.07*		SYRIA	.05	.08	.25	3
CUBA	.05	.08	.10	4	MIDWAY ISLAND	.03	.04	.07*		TANGANYIKA	.05	.08	.25	7
CURACAO	.05	.08	.10	2	MONACO	.05	.08	.15	2	THAILAND	.05	.08	.25	3
CYPRUS	.05	.08	.25	4	MONTERRAT, BWI	.05	.08	.10	3	TOGO	.05	.08	.25	2
CYRENAICA	.05	.08	.15	2	MOROCCO, (Br. & Fr.)	.05	.08	.15	2	TONGA ISLANDS	.05	.08	.25	4
CZECHOSLOVAKIA	.05	.08	.15	3	MOROCCO, (Spain)	.05	.08	.15	6	TRINIDAD	.05	.08	.10	3
DAHOMY	.05	.08	.25	2	MOZAMBIQUE	.05	.08	.25	4	TRIPOLITANIA	.05	.08	.15	2
DENMARK	.05	.08	.15	2	NAURU ISLAND	.05	.08	.25		TRISTAN DA CUNHA	.05	.08	.25	6
DODECANESE IS.	.05	.08	.15	2	NETHERLANDS	.05	.08	.15	2	TUNISIA	.05	.08	.15	2
DOMINICA	.05	.08	.10	3	NEW GUINEA	.05	.08	.25		TURKEY	.05	.08	.15	3
DOMINICAN REPUBLIC	.05	.08	.10	2	NETHERLANDS W. INDIES	.05	.08	.10	2	TURKS ISLAND	.05	.08	.10	2
ECUADOR	.05	.08	.10	3	NEVIS	.05	.08	.10	3	UGANDA	.05	.08	.25	7
EGYPT	.05	.08	.15	3	NEW CALEDONIA	.05	.08	.25	3	UNION OF SOUTH AFRICA	.05	.08	.25	6
ENGLAND	.05	.08	.15	3	NEWFOUNDLAND	.03	.04	.07*		URUGUAY	.05	.08	.10	4
ERITREA	.05	.08	.25	6	NEW GUINEA	.05	.08	.25	3	U.S.R.R.	.05	.08	.15	3
ESTONIA	.05	.08	.15	3	NEW HEBRIDES	.05	.08	.25	3	U. S. VIRGIN IS.	.03	.04	.07*	
ETHIOPIA	.05	.08	.25	4	NEW ZEALAND	.05	.08	.25	6	VATICAN CITY	.05	.08	.15	2
FALKLAND ISLANDS	.05	.08	.10	3	NICARAGUA	.05	.08	.10	4	VENEZUELA	.05	.08	.10	2
FAEROES ISLANDS	.05	.08	.15	2	NIGER	.05	.08	.25	2	VIET-NAM	.05	.08	.25	3
FIJI ISLANDS	.05	.08	.25	6	NIGERIA	.05	.08	.25	4	WAKE ISLAND	.03	.04	.07*	
FINLAND	.05	.08	.15	2	NORTH BORNEO	.05	.08	.25	6	WESTERN SAMOA	.05	.08	.25	6
FRANCE	.05	.08	.15	2	NORTHERN IRELAND	.05	.08	.15	3	YEMEN	.05	.08	.25	
FRENCH CAMEROONS	.05	.08	.25	3	NORTHERN RHODESIA	.05	.08	.25	7	YUGOSLAVIA	.05	.08	.15	2
FRENCH EQ. AFRICA	.05	.08	.25	3	NORWAY	.05	.08	.15	2	ZANZIBAR	.05	.08	.25	8
FRENCH GUIANA	.05	.08	.10	2	NYASALAND	.05	.08	.25	7					
FRENCH GUINEA	.05	.08	.25	2										
FRENCH OCEANIA	.05	.08	.25	2										
FRENCH SOMALILAND	.05	.08	.25	3										
FRENCH SUDAN	.05	.08	.25	2										
FRENCH TOGOLAND	.05	.08	.25	2										

* rate per ounce.

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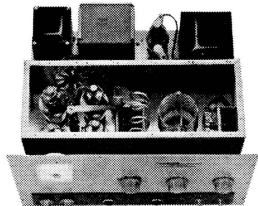
THESE RATES ARE REVISED AS OF JANUARY 1, 1960



HERE'S A NEW HEATHKIT® GROUNDED GRID KW LINEAR...JUST \$229⁹⁵

The new Heathkit "Warrior" is a completely self-contained, desk-top kilowatt linear, loaded with special features, at half the cost of comparable units! Compare feature for feature, quality component for quality component, you'll find no shortcuts . . . only the finest watt-per-dollar value in a linear amplifier on the amateur market today!

Maximum power input: SSB—1000 watts P.E.P., CW—1000 watts, AM—400 watts (500 watts using carrier controlled modulation), RTTY—650 watts. **Driving power required:** 50 to 75 watts—depending on frequency. **Output circuit:** Variable pi-network (50 to 75 ohms). **Input circuit:** Broad banded—requires no tuning. **Input impedance:** Approx. 70 ohms. **Band coverage:** 80, 40, 20, 15, 10 meters. **Panel metering:** Switch-selected, grid current, plate current, high voltage and relative power output for ease of loading. **Tube complement:** 4-811A, 2-866A. **Size:** 19½" W x 11½" H x 16" D.



This inside view shows the neat circuit layout and husky components that emphasize quality. Note the internal shielding of plate circuit for maximum protection against TVI.

CHECK THESE FEATURES . . .

Completely self-contained . . . HV, Fil. and Bias supplies built in. **Versatile . . .** May be driven by any 50 to 125 watt transmitter or exciter—no matching or swamping network required.

Efficient . . . Stable grounded grid circuitry allows most driving power to appear in output for up to 70% efficiency.

Oil-filled capacitor . . . And 5-50 henry swinging-choke provide the excellent dynamic regulation required for high peak power output with low distortion.

Inexpensive tubes . . . 4 paralleled 811A's and 2-866A's, forced-air cooled by silent built-in fan.

Stable . . . carefull design provides a high degree of over-all stability in conjunction with the grounded grid circuit configuration.

Exclusive . . . Internal RF shielding of plate circuit for maximum TVI suppression.

Interlocked switching . . . prevents accidental application of HV before switching on filament and bias.

Rugged construction . . . 16 gauge steel chassis—¼" aluminum front panel—welded one-piece cabinet.

Kit Model HA-10 . . . 100 lbs. \$23 dn., \$20 mo. **\$229.95**

Assembled Model HAW-10 . . .
100 lbs. \$33 dn., \$28 mo. **\$329.95**

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INTERNATIONAL "Q" SIGNALS

Abbreviation	Question	Answer or Advice	Abbreviation	Question	Answer or Advice
QRA	What is the name of your station?	The name of my stations is . . .	QSY	Will you listen to . . . [call sign(s)] on . . . kc/s (or Mc/s)	I am listening to . . . [call sign(s)] on . . . kc/s (or Mc/s).
QRB	How far approximately are you from my station?	The approximate distance between our stations is . . . nautical miles (or kilometres)	QSZ	Shall I change to transmission on another frequency?	Change to transmission on another frequency [or on . . . kc/s (or Mc/s)].
QRD	Where are you bound and where are you from?	I am bound for . . . from . . .	QTA	Shall I send each word or group more than once?	Send each word or group twice (or . . . times).
QRG	Will you tell me my exact frequency or that of . . .?	Your exact frequency (or that of . . . is . . . kc/s (or Mc/s).	QTB	Shall I cancel telegram number . . . as if it had not been sent?	Cancel telegram number . . . as if it had not been sent.
QRH	Does my frequency vary?	Your frequency varies.	QTE	Do you agree with my counting of words?	I do not agree with your counting of words; I will repeat the first letter or digit of each word or group.
QRI	How is the tone of my transmission?	The tone of your transmission is . . . (1. Good; 2. Variable; 3. Bad).	QTC	How many telegrams have you to send?	I have . . . telegrams for you (or for . . .).
QRK	What is the readability of my signals (or those of . . .)?	The readability of your signals (or those of . . .) is . . . (1. Unreadable; 2. Readable now and then; 3. Readable, but with difficulty; 4. Readable; 5. Perfectly readable).	QTH	What is my TRUE bearing from you? What is my TRUE bearing from . . . (call sign)? What is the TRUE bearing of . . . (call sign) from . . . (call sign)?	Your TRUE bearing from me is . . . degrees (at . . . hours) Your TRUE bearing from . . . (call sign) was . . . degrees (at . . . hours) The TRUE bearing of . . . (call sign) from . . . (call sign) was . . . degrees (at . . . hours).
QRL	Are you busy?	I am busy (or I am busy with . . .). Please do not interfere.	QTI	Will you send two dashes of ten seconds each followed by your call sign (repeated . . . times) [on . . . kc/s (or Mc/s)]?	I am going to send two dashes of ten seconds each followed by my call sign (repeated . . . times) [on . . . kc/s (or Mc/s)].
QRM	Are you being interfered with?	I am being interfered with.	QTL	Will you request . . . to send two dashes of ten seconds followed by his call sign (repeated . . . times) on . . . kc/s (or Mc/s)?	I have requested . . . to send two dashes of ten seconds followed by his call sign (repeated . . . times) on . . . kc/s (or Mc/s).
QRN	Are you troubled by static?	I am troubled by static.	QTN	What is your position in latitude and longitude (or according to any other indication)?	My position is . . . latitude . . . longitude (or according to any other indication).
QRO	Shall I increase power?	Increase power.	QTO	What is your TRUE track?	My TRUE track is . . . degrees.
QRP	Shall I decrease power?	Decrease power.	QTP	What is your speed?	My speed is . . . knots (or kilometres per hour).
QRQ	Shall I send faster?	Send faster (. . . words per minute).	QTV	What is your TRUE heading?	My TRUE heading is . . . degrees.
QRR	Are you ready for automatic operation?	I am ready for automatic operation. Send at . . . words per minute.	QTX	At what time did you depart from . . . (place)?	I departed from . . . (place) at . . . hours.
QRS	Shall I send more slowly?	Send more slowly (. . . words per minute).	QUA	Have you left dock (or port)?	I have left dock (or port)
QRT	Shall I stop sending?	Stop sending.	QUB	Are you airborne?	I am airborne.
QRU	Have you anything for me?	I have nothing for you.	QUC	Are you going to enter dock (or port)?	I am going to enter dock (or port)
QRV	Are you ready?	I am ready.	QUD	Are you going to alight (or land)?	I am going to alight (or land).
QRW	Shall I inform . . . that you are calling him on . . . kc/s (or Mc/s).	Please inform . . . that I am calling him on . . . kc/s (or Mc/s).	QUE	Can you communicate with my station by means of the International Code of Signals?	I am going to communicate with your station by means of the International Code of Signals.
QRX	When will you call me again?	I will call you again at . . . hours [on . . . kc/s (or Mc/s)].	QUT	What is the correct time?	The correct time is . . . hours.
QRY	What is my turn?	Your turn is Number . . . (Relates to communication.)	QUS	Will you send your call sign for . . . minute(s) now (or at . . . hours) [on . . . kc/s (or Mc/s)] so that your frequency may be measured?	I will send my call sign for . . . minute(s) now (or at . . . hours) [on . . . kc/s (or Mc/s)] so that my frequency may be measured.
QRZ	Who is calling me?	You are being called by . . . [on . . . kc/s (or Mc/s)].	QUT	What are the hours during which your station is open?	My station is open from . . . to . . . hours.
QSA	What is the strength of my signals (or those of . . .)?	The strength of your signals (or those of . . .) is . . . (1. Scarcely perceptible; 2. Weak; 3. Fairly good; 4. Good; 5. Very good).	QUT	Shall I stand guard for you on the frequency of . . . kc/s (or Mc/s) (from . . . to . . . hours)?	Stand guard for me on the frequency of . . . kc/s (or Mc/s) (from . . . to . . . hours).
QSB	Are my signals fading?	Your signals are fading.	QUT	Will you keep your station open for further communication with me until further notice (or until . . . hours)?	I will keep my station open for further communication with you until further notice (or until . . . hours).
QSD	Is my keying defective?	Your keying is defective.	QUA	Have you news of . . . (call sign)?	Here is news of . . . (call sign).
QSG	Shall I send . . . telegrams at a time?	Send . . . telegrams at a time.	QUB	Can you give me, in the following order, information concerning: visibility, height of clouds, direction and velocity of ground wind at . . . (place of observation)?	Here is the information requested . . .
QSI	What is the charge to be collected per word to . . . including your internal telegraph charge?	The charge to be collected per word to . . . including my internal telegraph charge is . . . francs.	QUC	What is the number (or other indication) of the last message you received from me [or from (call sign)]?	The number (or other indication) of the last message I received from you [or from . . . (call sign)] is . . .
JSK	Can you hear me between your signals?	I can hear you between my signals.	QUD	Have you received the urgency signal sent by . . . (call sign of mobile station)?	I have received the urgency signal sent by . . . (call sign of mobile station) at . . . hours.
QSL	Can you acknowledge receipt?	I am acknowledging receipt.	QUF	Have you received the distress signal sent by . . . (call sign of mobile station)?	I have received the distress signal sent by . . . (call sign of mobile station) at . . . hours.
QSM	Shall I repeat the last telegram which I sent you, or some previous telegram?	Repeat the last telegram which you sent me [or telegram(s) number(s) . . .].	QUG	Will you be forced to alight (or land)?	I am forced to alight (or land immediately).
JSN	Did you hear me [or . . . (call sign)] on . . . kc/s (or Mc/s)?	I did hear you [or . . . (call sign)] on . . . kc/s (or Mc/s).	QUH	Will you give me the present barometric pressure at sea level?	The present barometric pressure at sea level is . . . (units).
QSO	Can you communicate with . . . direct or by relay?	I can communicate with . . . direct (or by relay through . . .).			
QSP	Will you relay to . . . free of charge?	I will relay to . . . free of charge.			
QSQ	Have you a doctor on board [or is . . . (name of person) on board]?	I have a doctor on board [or . . . name of person) is on board].			
QSU	Shall I send or reply on this frequency [or on . . . kc/s (or Mc/s)] (with emissions of class . . .)?	Send or reply on this frequency [or on . . . kc/s (or Mc/s)] (with emissions of class . . .).			
QSV	Shall I send a series of V's on this frequency [or . . . kc/s (or Mc/s)]?	Send a series of V's on this frequency [or . . . kc/s (or Mc/s)].			
QSW	Will you send on this frequency [or on . . . kc/s (or Mc/s)] (with emissions of class . . .)?	I am going to send on this frequency [or on . . . kc/s (or Mc/s)] (with emissions of class . . .).			

Federal Communications Commission Examination Points

Examinations for commercial and amateur radio operator licenses are conducted at the following F.C.C. field offices on the days designated by the Engineer in Charge of each office. Specific dates should be obtained from the Engineer in Charge.

Radio District	Address of the Engineer in charge
1—BOSTON 9, MASSACHUSETTS	1600 Custom House
2—NEW YORK 14, NEW YORK	748 Federal Building 641 Washington Street
3—PHILADELPHIA 6, PENNSYLVANIA	1005 New U. S. Customhouse
4—BALTIMORE 2, MARYLAND	400 McCawley Building 400 E. Lombard Street
5—NORFOLK 10, VIRGINIA	402 Federal Building
6—ATLANTA 3, GEORGIA	718 Atlanta National Bldg., 50 Whitehall St., S.W.
6S—SAVANNAH, GEORGIA (P. O. 77)	214 Post Office Building
7—MIAMI 1, FLORIDA	312 Federal Building
7T—TAMPA 6, FLORIDA	Rm. 201-221 N. Howard Ave.
8—NEW ORLEANS 12, LOUISIANA	608 Federal Office Building 600 South Street
8M—MOBILE 10, ALABAMA	419 U. S. Court and Customs House
9—HOUSTON 11, TEXAS	326 U. S. Appraisers Building 7300 Wingate Street
9B—BEAUMONT, TEXAS (P. O. Box 1527)	301 Post Office Building 300 Willow Street
10—DALLAS 2, TEXAS	401 States General Life Insurance Bldg. 708 Jackson Street
11—LOS ANGELES 14, CALIFORNIA	Mez 50, 849 South Broadway
11SD—SAN DIEGO 1, CALIFORNIA	Fox Theater Building 1245 Seventh Avenue
12—SAN FRANCISCO 26, CALIFORNIA	323-A Customhouse 555 Battery Street
13—PORTLAND 5, OREGON	201 U. S. Court House 620 S. W. Main Street
14—SEATTLE 4, WASHINGTON	802 Federal Office Building 1st Avenue and Marion
15—DENVER 2, COLORADO	521 New Customhouse 19th between California & Stout Streets
16—ST. PAUL 2, MINNESOTA	208 Federal Courts Building 6th & Market Streets
17—KANSAS CITY 6, MISSOURI	3100 Federal Office Building 911 Walnut Street
18—CHICAGO 4, ILLINOIS	826 U. S. Courthouse 219 South Clark Street
19—DETROIT 26, MICHIGAN	1029 Federal Building
20—BUFFALO 3, NEW YORK	328 Post Office Building Ellicott and Swan Streets
21—HONOLULU 13, HAWAII	502 Federal Bldg. P. O. Box 1021
22—SAN JUAN 13, PUERTO RICO	322-323 Federal Building Post Office Box 2987
23—ANCHORAGE, ALASKA	Room 55, U. S. Post Office Bldg.
23J—JUNEAU, ALASKA	6 Shattuck Building
24—WASHINGTON 25, D. C.	718 Jackson Pl., N. W.

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0000	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	Noon	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM
0100	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	Noon	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night
0200	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	Noon	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM
0300	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	Noon	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM
0400	5AM	6AM	7AM	8AM	9AM	10AM	11AM	Noon	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM
0500	6AM	7AM	8AM	9AM	10AM	11AM	Noon	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM
0600	7AM	8AM	9AM	10AM	11AM	Noon	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM
0700	8AM	9AM	10AM	11AM	Noon	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM
0800	9AM	10AM	11AM	Noon	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM	7AM
0900	10AM	11AM	Noon	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM
1000	11AM	Noon	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM
1100	Noon	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM
1200	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM
1300	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	Noon
1400	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	Noon	1PM
1500	4PM	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	Noon	1PM	2PM
1600	5PM	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	Noon	1PM	2PM	3PM
1700	6PM	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	Noon	1PM	2PM	3PM	4PM
1800	7PM	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	Noon	1PM	2PM	3PM	4PM	5PM
1900	8PM	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	Noon	1PM	2PM	3PM	4PM	5PM	6PM
2000	9PM	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	Noon	1PM	2PM	3PM	4PM	5PM	6PM	7PM
2100	10PM	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	Noon	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM
2200	11PM	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	Noon	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM
2300	Mid Night	1AM	2AM	3AM	4AM	5AM	6AM	7AM	8AM	9AM	10AM	11AM	Noon	1PM	2PM	3PM	4PM	5PM	6PM	7PM	8PM	9PM	10PM

With this chart you can convert standard time in any time zone to GMT or tell what time it is in other parts of the world. To correctly use this chart visualize each horizontal line as a complete circle. From your time zone tracing horizontally to the right (Counter Clockwise) it will be tomorrow when you pass midnight and yesterday when you pass the international date line. To the left (Clockwise) it will be yesterday when you pass midnight and tomorrow when you pass the international date line. There is no change in date when you pass both midnight and the international date line going in one direction. For instance at 8 PM in New York Eastern Standard Time it is 2 AM tomorrow in Berlin, Germany and 11 AM tomorrow in Sydney, Australia. Always trace in the shortest direction from your time zone to find what time it is in any other zone. Copyright 1938 Radio Amateur Call Book, Inc., Chicago, USA.

Given below are a number of Q signals whose meanings most often need to be expressed with brevity and clearness in amateur work. (Q abbreviations take the form of questions only when each is sent followed by a question mark.)

- QAV Are you calling me? I am calling.....
- QRG Will you tell me my exact frequency in kilocycles? Your frequency is.....kc.
- QRH Does my frequency vary? Your frequency varies.
- QRI How is the tone of my transmission? The tone of your transmission is..... (1. good; 2. variable; 3. bad).
- QRJ Are you receiving me badly? Are my signals weak? I cannot receive you. Your signals are too weak.
- QRK What is the readability of my signals (1 to 5)? The readability of your signals is.....(1 to 5).
- QRL Are you busy? I am busy or busy with (.....).
- QRM Are you being interfered with? I am interfered with.
- QRN Are you troubled by atmospherics? I am being troubled by atmospherics.
- QRQ Shall I send faster? Send faster (..... words per min.).
- QRS Shall I send more slowly? Send more slowly (.....w.p.m.).
- QRT Shall I stop sending? Stop sending.
- QRU Have you anything for me? I have nothing for you.
- QRV Are you ready? I am ready.
- QRW Shall I tell.....that you are calling him? Please tell.....that I am calling him.
- QRX When will you call again? I will call you again at.....hours (on.....kc).
- QRZ By whom am I being called? You are being called by.....
- QSA What is the strength of my signals (1 to 5)? The strength of your signals is.....(1 to 5).
- QSB Does the strength of my signals vary? The strength of your signals varies.
- QSD Is my keying correct? Are my signals distinct? Your keying is incorrect; your signals are bad.
- QSG Shall I send.....telegrams (or one) at a time? Send.....telegrams at a time.
- QSL Can you give me acknowledgment of receipt? I give you acknowledgment of receipt.
- QSM Shall I repeat the last telegram I sent you? Repeat the last telegram you sent me.
- QSO Can you communicate with.....direct (or through.....)? I can communicate with.....direct (or through.....).
- QSP Will you relay to.....? I will relay to.....
- QSV Shall I send a series of VVV.....? Send a series of VVV.
- QSW Will you send on.....kcs? etc. I will send on.....kcs, etc.
- QSX Will you listen for.....(call sign) on.....kcs? I am listening for.....on.....kcs.
- QSY Shall I change to.....kilocycles without changing the type of wave? Change to.....kc. without changing type of wave.
- QSZ Shall I send each word or group twice? Send each word or group twice.
- QTA Shall I cancel nr.....as if it had not been sent? Cancel nr.....as if it had not been sent.
- QTB Do you agree with my number of words? I do not agree with your number of words; I will repeat the first letter of each word and the first figure of each number.
- QTC How many telegrams have you to send? I have.....telegrams for you or for.....
- QTH What is your position (location)? My location is.....(by any indication).
- QTR What is the exact time? The time is.....
- CQ is the general call to any station.
- Special abbreviations adopted by ARRL:
- QST General call preceding a message addressed to all amateurs and ARRL Members. This is in effect "CQ ARRL."
- QRRR Official ARRL "land SOS." A distress call for emergency use only by station in an emergency situation.

A.R.R.L.-NET "QN" SIGNALS

- QNA Answer in pre-arranged order.
- QNB Act as relay between.....and.....
- QNC All Net stations copy.
- QND Net is directed.
- QNE Entire Net please stand by.
- QNF Net is free.
- QNG Take over as Net Control Station.
- QNH Your Net frequency is high.
- QNI Report into Net or I report into Net.
- QNJ Can you copy me (or.....)?
- QNK Transmit message(s) (for.....) to.....
- QNL Your Net frequency is low.
- QNM You are QRMing.....; please stand by.
- QNN Net Control Station is.....(on.....kc.).
- QNO Going out of Net.
- QNP Unable to copy you (or.....)?
- QNQ Send you information "QNC" or May I transmit message "QNC?"
- QNR Answer.....and relay (or receive) traffic.
- QNS Following stations in Net.....
- QNT Leaving Net temporarily (or for..... minutes) or I request to leave Net temporarily, etc.
- QNU.....has traffic for you; await instructions (or QNU QNR).
- QNV Please request.....to QSV.
- QNW Through whom shall I relay message for.....?
- QNX You are excused from Net or I request to be excused.
- QNY Please shift to another frequency (or to.....kc.) to prevent QRMing other Net stations (or to clear traffic with.....).
- QNZ Zero beat your signal with that of the Net Control Station.

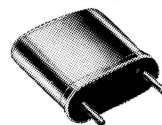


AMATEUR
Fundamental, PR Type Z-2
Frequency Ranges in Kcs.: 3,500 to 4,000 (80M); 7,000 to 7,425 (40M); 8,000 to 8,222 (2M); 8,334 to 9,000 (6M).
Rugged. Low drift, fundamental oscillators. High activity and power output. Stands up under maximum crystal currents. Stable, long-lasting; ± 500 cycles.....\$2.95 Net

Third Overtone, PR Type Z-9A

Hermetically sealed; calibrated 24,000 to 24,666 and 25,000 to 27,000 Kc., ± 3 Kc.; .050" pins.
\$4.95 Net

6 Meters, PR Type Z-9A

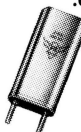


Fifth overtone; for operating directly in 6-meter band; hermetically sealed; calibrated 50 to 54 Mc., ± 15 Kc.; .050" pins.....\$6.95 Net

SPECIAL TYPES

Commercial Crystals available from 100 Kc. to 70 Mc. Prices on request.

Type Z-1, Aircraft | **Z-1, MARS & CAP**
3023.5 Kc.,
.005% \$3.45 Net
Official assigned transmitter frequencies in the range. Calibrated to .005%. 1600 to 10000 Kc.....\$3.45 Net



Type Z-6A, Frequency Standard
To determine band-edge. To keep the VFO and receiver properly calibrated.
100 Kc.....\$6.95 Net

Type 2XP

Suitable for converters, experimental, etc. Same holder dimensions as Type Z-2.

1600 to 12000 Kc. (Fund.)
 ± 5 Kc.....\$3.45 Net
12001 to 25000 Kc. (3d Mode)
 ± 10 Kc.....\$4.45 Net

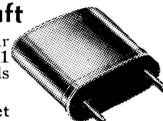


Type Z-1, TV Marker Crystals

Channels 2 through 13.....\$6.45 Net
4.5 Mc. Inter-carrier, .01%.....\$2.95 Net
5.0 Mc. Sig. Generator, .01%.....\$2.95 Net
10.7 Mc. FM, IF, .01%.....\$2.95 Net

VHF Type Z-9R, Aircraft

For Lear, Narco and similar equipment operating in the 121 Mc. region, requiring crystals in 30 Mc. range.
Each.....\$4.95 Net



TYPE Z-9R CITIZENS BAND CLASS "D"
FCC assigned frequencies in megacycles: 26.965, 26.975, 26.985, 27.005, 27.015, 27.025, 27.035, 27.055, 27.065, 27.075, 27.085, 27.105, 27.115, 27.125, 27.135, 27.155, 27.165, 27.175, 27.185, 27.205, 27.215, 27.225; calibrated to .005%.....\$2.95 Net
(Be sure to specify manufacturer of equipment)

TYPE Z-9R RECEIVER CRYSTALS FOR CITIZENS BAND CLASS "D"—Specify I.F. frequency, also whether receiver oscillator is above or below transmitter frequency. Calibrated to .005%.....\$2.95 Net
(Be sure to specify manufacturer of equipment)

TYPE Z-9R RADIO CONTROL CLASS "C"
FCC assigned frequencies in megacycles: 26.995, 27.045, 27.095, 27.145, 27.195, 27.255; calibrated to .005%.....\$2.95 Net
(Be sure to specify manufacturer of equipment)

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STANDARD TIME THROUGHOUT THE WORLD

Compiled by the National Bureau of Standards

Standard time for the world, like longitude, is counted from Greenwich, England, as the prime meridian. Places to the east of Greenwich have faster time than Greenwich, while places to the west have slower time. The world is divided into time zones of approximately 15° for every hour. Since Greenwich is in the 0 zone, the number of any zone, if added or subtracted to the time in Greenwich, will give the corresponding time in that particular zone.

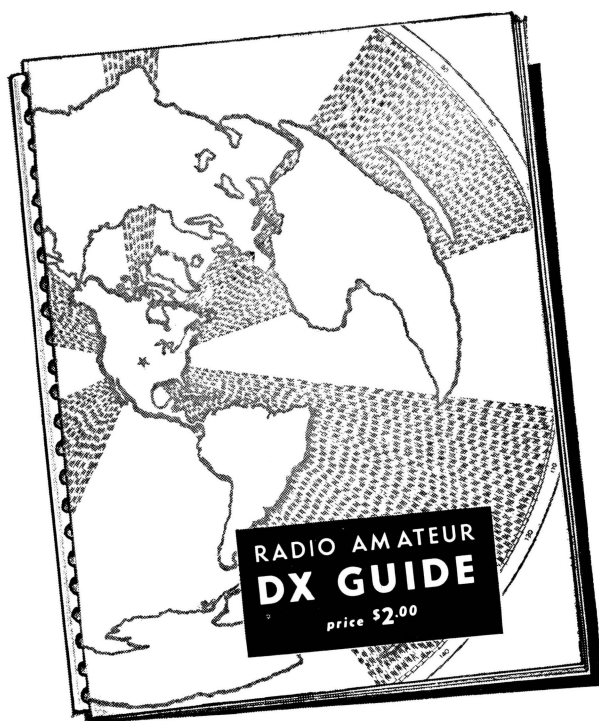
Not all countries follow the International Time Zone System, but some use the time of some principal city as a standard and others have no standard time. The different time zones of the world are numbered east and west of Greenwich. The zone number when added or subtracted, as shown in the following table, from the time of the zone gives the corresponding Greenwich time. Thus zones to the east have faster time than Greenwich and are indicated as minus (—), while those to the west have slower time and are indicated as plus (+).

Country	Zone Number	Country	Zone Number	Country	Zone Number
Admiralty Islands	—10	Ecuador	+5	Norway\$	—1
Afghanistan	—4	Egypt†	—2	Nyasaland	—2
Alaska		Eire†	0	Orkney Islands	0
Juneau, Ketchikan, Sitka	+8	Ellice Islands	—12	Pakistan	—5½
Cordova	+9	El Salvador	+6	Palestine†	—2
Central part	+10	England†	0	Panama	+5
West coast, Aleutian Islands	+11	Equatorial Africa, French	—1	Paraguay	+4
Albania†	—1	Eritrea	—3	Peru†	+5
Algeria	—0	Ethiopia	—3	Philippine Islands	—8
Amirante Islands	—4			Poland	
Amsterdam Island	—5	Falkland Islands†	+4	Western part	—1
Andaman Islands	—6½	Fanning Island	+11	Eastern part	—2
Andora†	0	Faroe Islands	—2	Portugal†	0
Anglo-Egyptian Sudan	—2	Finland†	—2	Puerto Rico	+4
Angola	—1	France†	0	Reunion Island	—4
Anquilla Island	+4			Rhodesia	
Antiqua Island	+4	Gambia	0	Northern	—2
Arabia†		Germany†	—1	Southern	—2
Aden†	—3	Gibraltar†	0	Rio de Oro	+1
Argentina†	+4	Gilbert Islands	—12	Rumania	—2
Aru Islands	—9	Gold Coast†	0		
Ascension Island	0	Greece†	—2	Samoa Islands	+11
Austral (Tubuai) Islands	+10	Scoresby Sound	+2	San Marino†	—1
Australia		Angmagssalik, Disko Island, Western Coast	+3	Sarawak	—8
Western Australia	—8	Interior†	+4	Saudi Arabia†	0
Northern Territory, South Australia†	—9½	Grenada Island	+4	Scotland	0
New South Wales,† Queensland, Victoria*	—10	Guadeloupe Island	+4	Senegal†	0
Austria†	—1	Guam Island	—10	Seychelles Islands	—4
Azores Islands†	0	Guatemala	+6	Siam	—7
Bahama Islands	+5	Guiana, British, Dutch, French	+3½	Sierra Leone	0
Bahrain Islands	—4	Guinea	—0	Society Islands	+10
Balearic Islands†	0	French, Spanish	0	Solomon Islands	—11
Barbados Island†	+4	Portuguese	+1	Somaliland	—3
Bechuanaland	—2	Haiti	+5	Southwest Africa	—2
Belgium†	0	Hawaiian Islands	+10	Spain†	0
Bermuda Islands†	+4	Hebrides Islands	0	Spitzbergen†	
Bhutan	—5½	Honduras	+6	St. Croix Island	+4
Bolivia	+4	Hungary†	—1	St. Helena Island	0
Borneo†	—8	Iceland†	+1	St. Lawrence Island	+11
Brazil		India†	—5½	St. Lucia Island	+4
Fernando Noronha Island, Isle de		Indo-China†	—8	St. Matthew Island	+11
Trinidad	+2	Iran	—3½	St. Miguel Island	0
Bahia, Ceara, Esperito Santo, Goyaz, Miranhao, Minas-Geraes, Para, Parana, Pernambuco, Piauh, Rio de Janeiro, Rio Grande do Norte, Rio Grande do Sul, Santa Catherina, Sao Paulo	+3	Iraq†	—3	St. Pierre Island†	+4
Amazonas, Matto Grosso	+4	Ireland, Northern†	0	St. Thomas Island	+4
Acre Territory	+5	Isle of Man	0	St. Vincent Island	+4
British Honduras†	+6	Isle of Pines	+5	Sudan (French West Africa)	
Bulgaria	—3	Italy†	—1	Eastern part	0
Burma	—6½	Jamaica	+5	Western part	+1
Cameroons	—1	Japan†	—9	Sumatra Island	—7
Canada		Java	—8	Sweden	—1
Belle Isle, Labrador,† Newfoundland†	+3½	Kenya	—3	Switzerland†	—1
Anticosti Island, Cape Breton Island, Magdalen Island, New Brunswick, Nova Scotia,† Prince Edward Island, Quebec (east of 68° W.),† Sable Island, Melville Peninsula (east), Ontario (east of 90° W.),† Quebec (west of 68 W.),† Southampton Island	+4	Kodiak Island	+10	Syria†	—2
Manitoba, Ontario (west of 90° W.), Melville Peninsula (west), Northwest Territories (east)	+5	Korea	—8½	Tanganyika	—3
Alberta, Saskatchewan, Northwest Territories (middle)	+7	Labrador	+3½	Tangier	0
British Columbia, Northwest Territories (west)	+8	Laccadive Islands	—5½	Tasmania Island†	—10
Yukon	+9	Latvia*	—2	Timor Island	—9
Arctic Islands†		Liberia	—1	Tobago Island	+4
Canary Islands†	+1	Libya*	—1	Togoland	0
Cape Verde Islands	+2	Liechtenstein	—1	Tonga (Friendly) Islands	
Caroline Islands	—10	Lithuania*	—2	Transjordan*	
Ceylon Island†	—5½	Lord Howe Island	—10½	Trinidad Island	+4
Chagos Archipelago†	—5	Luxembourg*	0	Tunisia	—1
Chile	+4	Madagascar Island	—3	Turkey†	—2
China		Madeira Islands	0	Turks Island	+5
Western part	—5	Malay States	—7½	Uganda	—3
Mid-Western part	—6	Maldives Islands	—1	Union of South Africa†	—2
Mid-Eastern part, Hainan, Palekoi, Hongkong, Macao	—7	Marshall Islands	—12	United States of America†	
Eastern part	—8	Malta Island	—1	Eastern	+5
Christmas Island	—7	Martinique Island	+4	Central	+6
Colombia	+5	Mauritius Island	+4	Mountain	+7
Congo		Mexico*		Pacific	+8
Western part	—1	Aguascalientes, Campeche, Chiapas, Chihuahua, Coahuila, Durango, Guanajuato, Guerrero, Jalisco, Mexico, Michoacan, Morelos, Nuevo Leon, Oaxaca, Puebla, Queretaro, Quintana Roo, San Luis Potosi, Tabasco, Tamaulipas, Tlaxcala, Yucatan	+6	Alaska	+10
Eastern part	—2	Baja California (south of 28° N.), Nayarit, Sinaloa, Sonora	+7	Uruguay†	+3
Cook Islands	+6	Baja California (north of 28° N.)	+8	U. S. S. R.†	
Costa Rica	+5	Midway Island	+11	Estonia, Karelo-Finnish, Latvia, Lithuania, Moldavia, Russia, Ukraine, White Russia	—2
Cuba†	+4½	Monaco\$	0	Armenia, Azerbaijan, Georgia	—3
Curacao Island	—2	Morocco\$	—2	Kazak, Tadzhik, Turkmen, Uzbek	—4
Cyprus Island	—1	Mozambique	—2	Kirghiz, W. Siberian Region	—5
Czechoslovakia	0	Nepal	—5½	Approximately 82½° to 97½°	—6
Dahomey	—1	Netherlands	0	Buryat-Mongol, E. Siberian Region	—7
Denmark†	—1	New Caledonia Islands	—11	Approximately 112½° to 127½°	—8
Dodecanese Islands	—2	Newfoundland\$	+3½	Kuril Islands, Sakhalin	—9
Dominican Republic†	+5	New Guinea		Approximately 142½° to 157½°	—10
		Western part (Dutch)	—9	Approximately 157½° to 172½°	—11
		Eastern part (British)	—10	Approximately 172½° to coast	—12
		New Hebrides Islands	—11	Vatican City	—1
		New Zealand\$	—12	Venezuela	+4½
		Nicaragua	+6	Virgin Islands	+4
		Nigeria	—1	Wake Island	—12
		Norfolk Island	—11½	Wales	0
		Northern Ireland\$	0	Wrangell Island	—12
				Yap Island	—10
				Yugoslavia	—1
				Zanzibar Island	—3

*See time Zone Chart of the World No. 5192, published by Hydrographic Office, Navy.

†Fast time in use during part of the year.

‡No definite standard time used.
\$1 hour or 2 hours fast, fixed annually.



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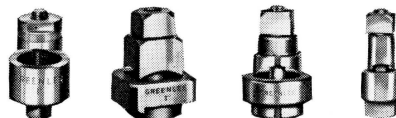
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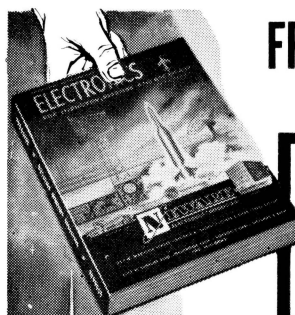
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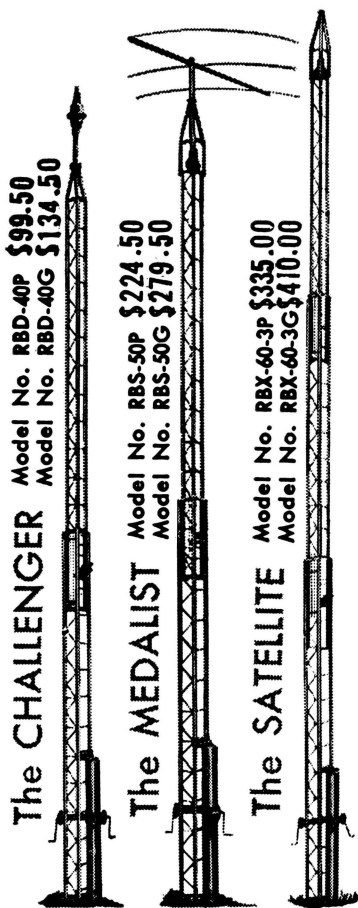
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BIRMINGHAM, ALA.	140		1174	1052	776	442	1119	578	618	334	581	1095	670	641	1152	1602	567	433	374	579	325	1802	331	665	659	862	182	312	864	638	783	1456	608	400	1466	2013	2082	661	512
BISMARCK, N. D.	1244	1174		1489	1106	1133	440	734	1014	1359	990	531	506	926	1081	534	1211	881	1529	618	943	1267	965	1838	682	384	1030	1297	1396	1430	1367	1095	1127	779	694	1265	1013	1318	1474
BOSTON, MASS.	937	1052	1489		400	622	1735	851	551	791	1551	1769	1159	613	2072	2024	1605	807	1017	1251	1259	2596	826	1255	857	1123	943	1359	188	471	271	2300	483	1038	2099	2699	2493	393	673
BUFFALO, NEW YORK	697	776	1106	400		344	1335	454	173	623	1198	1370	760	216	1692	1640	1286	435	879	861	913	2198	483	1181	458	731	627	1086	292	947	279	1906	178	662	1699	2300	2117	292	598
CHARLESTON, W. VA.	353	442	1133	622	344		1246	400	217	302	935	1256	673	284	1475	1642	984	262	553	701	642	2054	225	870	461	755	322	754	440	311	365	1733	168	465	1616	2205	2132	253	350
CHEYENNE, WYOMING.	1229	1119	440	1735	1335	1246		891	1199	1390	726	96	583	1125	653	521	947	986	1493	560	813	882	1033	1763	878	642	1032	1131	1604	1556	1556	663	1298	795	371	967	973	1477	1540
CHICAGO, ILLINOIS	587	578	734	851	454	400	891		308	652	803	920	309	238	1252	1248	940	165	863	414	552	1745	269	1188	81	355	397	833	713	699	666	1453	410	262	1260	1858	1737	597	745
CLEVELAND, OHIO	554	618	1014	551	173	217	1199	308		518	1025	1227	617	90	1525	1541	1114	263	770	700	740	2049	311	1087	335	630	459	924	405	432	360	1749	115	492	1568	2166	2026	306	541
COLUMBIA, S. C.	194	334	1359	791	623	302	1390	652	518		914	1380	863	585	1484	1837	891	489	256	830	644	2123	395	569	726	998	358	599	605	332	523	1781	448	603	1751	2317	2326	405	178
DALLAS, TEXAS	721	581	990	1551	1198	935	726	803	1025	914		663	632	999	572	1247	225	763	908	451	293	1240	726	1111	857	862	617	443	1374	1196	1299	887	1070	547	999	1483	1681	1185	1091
DENVER, COLORADO	1212	1095	531	1769	1370	1256	96	920	1227	1380	663		610	1156	557	591	879	1000	1467	558	780	831	1038	1726	914	700	1023	1082	1631	1566	1579	586	1320	796	371	949	1021	1494	1537
DES MOINES, IOWA	739	670	506	1159	760	673	583	309	617	863	632	610		546	983	977	821	411	1023	180	478	1438	476	1333	309	235	525	827	1022	983	973	1155	715	273	953	1550	1467	896	993
DETROIT, MICHIGAN	596	641	926	613	216	284	1125	238	90	585	999	1156	546		1479	1455	1105	240	831	645	723	1983	316	1152	252	543	470	939	482	522	443	1690	205	455	1492	2091	1938	396	623
EL PASO, TEXAS	1291	1152	1081	2072	1692	1475	653	1252	1525	1484	572	557	983	1479		1065	676	1264	1473	839	847	701	1254	1643	1279	1157	1169	983	1905	1755	1836	346	1590	1034	689	995	1376	1728	1661
HELENA, MONTANA	1697	1602	534	2024	1640	1642	521	1248	1541	1837	1247	591	977	1455	1065		1467	1382	1973	1023	1315	924	1453	2260	1206	912	1488	1646	1929	1947	1897	907	1652	1236	403	807	490	1842	1969
HOUSTON, TEXAS	701	567	1211	1605	1286	984	947	940	1114	891	225	879	821	1105	676	1467		865	821	644	388	1374	803	968	1005	1056	665	318	1420	1204	1341	1017	1137	679	1200	1645	1891	1220	1066
INDIANAPOLIS, IND.	426	433	881	807	435	262	986	165	263	489	763	1000	411	240	1264	1382	865		699	453	483	1809	107	1024	243	511	251	712	646	573	585	1499	330	231	1356	1949	1872	494	593
JACKSONVILLE, FLA.	285	374	1529	1017	879	553	1493	863	770	256	908	1467	1023	831	1473	1973	821	699		950	690	2147	594	326	942	1191	499	504	838	546	758	1794	703	751	1837	2374	2455	647	346
KANSAS CITY, MISSOURI	676	579	618	1251	861	701	560	414	700	830	451	558	180	645	839	1023	644	453	950		325	1356	480	1241	443	413	473	680	1097	1009	1038	1049	781	238	925	1506	1506	945	981
LITTLE ROCK, ARK.	456	325	943	1259	913	642	813	552	740	644	293	780	478	723	847	1315	388	483	690	325		1480	435	949	618	708	325	355	1081	909	1007	1137	779	291	1148	1688	1785	892	818
LOS ANGELES, CALIF.	1936	1802	1267	2596	2198	2054	882	1745	2049	2123	1240	831	1438	1983	701	924	1374	1809	2147	1356	1480		1829	2339	1744	1524	1780	1673	2451	2355	2394	357	2136	1589	579	347	959	2300	2294
LOUISVILLE, KY.	319	331	965	826	483	225	1033	269	311	395	726	1038	476	316	1254	1453	803	107	594	480	435	1829		919	349	605	154	623	652	529	582	1508	344	242	1402	1986	1943	476	516
MIAMI, FLORIDA	604	665	1838	1255	1181	870	1763	1188	1087	569	1111	1726	1333	1152	1643	2260	968	1024	326	1241	949	2339	919		1267	1511	815	669	1092	797	1019	1982	1010	1061	2089	2594	2734	923	598
MILWAUKEE, WIS.	668	659	682	857	458	461	878	81	335	726	357	914	309	252	1279	1206	1005	243	942	443	618	1744	349	1267		299	478	910	733	749	694	1464	446	327	1242	1842	1692	637	810
MINNEAPOLIS, MINN.	907	862	384	1123	731	755	642	355	630	998	862	700	235	543	1157	912	1056	511	1191	413	708	1524	605	1511	299		697	1051	1018	1047	985	1280	743	466	987	1584	1395	934	1100
NASHVILLE, TENN.	214	182	1030	943	627	322	1032	397	459	358	617	1023	525	470	1169	1488	665	251	499	473	325	1780	154	815	478	697		469	761	586	685	1446	472	254	1393	1963	1975	569	517
NEW ORLEANS, LA.	424	312	1297	1359	1086	754	1131	833	924	599	443	1082	827	939	983	1646	318	712	504	680	355	1673	623	669	910	1051	469		1171	926	1089	1316	919	598	1434	1926	2101	966	769
NEW YORK, N. Y.	748	864	1396	188	292	440	1604	713	405	605	1374	1631	1022	482	1905	1929	1420	646	838	1097	1081	2451	652	1092	733	1018	761	1171		296	83	2145	317	875	1972	2571	2408	205	499
NORFOLK, VA.	505	638	1430	471	438	311	1556	699	432	332	1196	1566	983	522	1755	1947	1204	573	546	1009	909	2355	529	797	749	1047	586	926	296		222	2028	318	771	1927	2515	2436	146	203
PHILADELPHIA, PA.	666	783	1367	271	279	365	1556	666	360	523	1299	1579	973	443	1836	1897	1341	585	758	1038	1007	2394	582	1019	694	985	685	1089	83	222		2083	259	811	1925	2523	2380	123	423
PHOENIX, ARIZONA	1592	1456	1095	2300	1906	1733	663	1453	1749	1781	887	586	1155	1690	346	907	1017	1499	1794	1049	1137	357	1508	1982	1464	1280	1446	1316	2145	2028	2083		1828	1272	504	653	1114	1983	1954
PITTSBURGH, PA.	521	608	1127	483	178	168	1298	410	115	448	1070	1320	715	205	1590	1652	1137	330	703	781	779	2136	344	1010	446	743	472	919	317	318	259	1828		559	1668	2264	2138	192	442
ST. LOUIS, MO.	467	400	779	1038	662	465	795	262	492	603	547	796	273	455	1034	1236	679	231	751	238	291	1589	242	1061	327	466	254	598	875	771	811	1272	559		1162	1744	1724	712	746
SALT LAKE CITY, UTAH	1583	1466	694	2099	1699	1616	371	1260	1568	1751	999	371	953	1492	689	403	1200	1356	1837	925	1148	579	1402	2089	1242	987	1393	1434	1972	1927	192								

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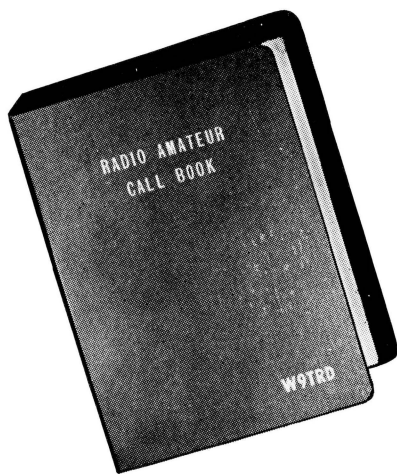
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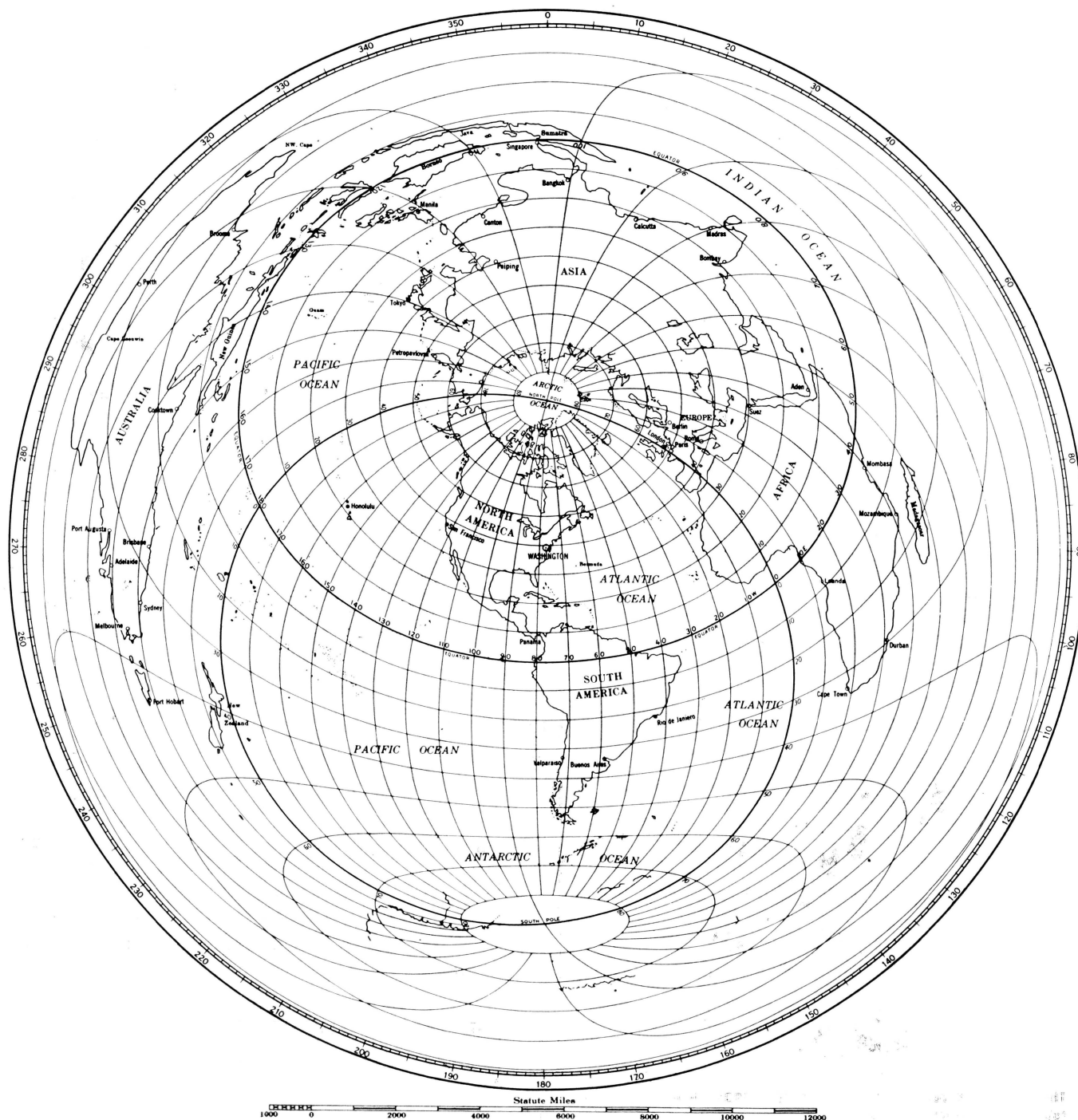
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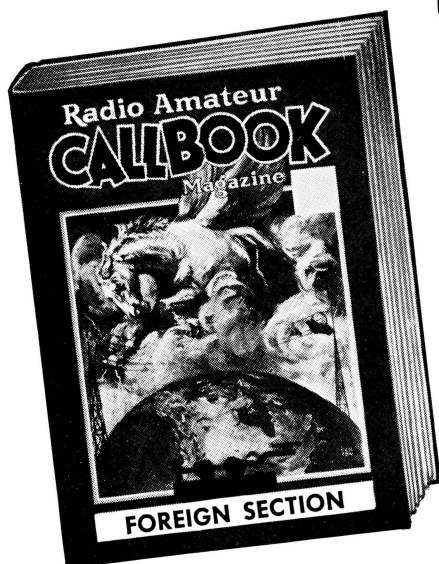
Great Circle Chart of the World Centered on WASHINGTON, D. C.



To find the great circle bearing of any point in the world from Washington, D. C., draw a straight line from the center and note the reading in degrees as indicated on the outer scale. The bar scale may be used to determine the approximate distance. This map was prepared by the Hydrographic Office of the U. S. Navy Department.

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A	ADAM
B	BAKER
C	CHARLIE
D	DAVID
E	EDWARD
F	FRANK
G	GEORGE
H	HENRY
I	IDA
J	JOHN
K	KING
L	LEWIS
M	MARY
N	NANCY
O	OTTO
P	PETER
Q	QUEEN
R	ROBERT
S	SUSAN
T	THOMAS
U	UNION
V	VICTOR
W	WILLIAM
X	X-RAY
Y	YOUNG
Z	ZEBRA

ON GOOD PHONE OPERATING

1. *Listen much . . . with care.* Avoid distractions in your operating room. Tune the band well after each call.
2. *Time your calls; monitor your own frequency.* Call only when a station is free.
3. *Make short calls, with breaks to listen.* Speak clearly, at a steady, modest rate. Three short calls are better than one long one.
4. *Use push-to-talk technique . . . speak near the mike.* Watch the modulation indicator. Keep local background noise at a minimum.
5. *Make notes.* Avoid missing points for comment. Jot down topics to avoid repeats.
6. *Talk in connected thoughts and phrases.* Notes will help avoid mixing up subjects. Push-to-talk technique will keep brother amateurs from calling you a monologist.
7. *Speak naturally.* QSOs need not be cut and dried. Make them interesting. Avoid exhibitionism. Use proper operating form to promote efficiency in communication and add respect and prestige for your station.

Use of this standard list is recommended by ARRL. Haphazard selection of words often results in confusion. A degree of uniformity in use of phonetic words reflects favorably on your individual operating, and on the whole amateur service.

ARRL Communications Department.

THE UNITED STATES



To find the great circle bearing to any point in the world from the center of the United States, draw a straight line from the star and note the reading in degrees on the outer scale. The bar scale at the bottom of the chart can be used to determine the distance in statute miles. For bearings to the nearest degree reference is invited to the table on the opposite Page. The outlines of this chart were prepared by the U.S. Coast and Geodetic Survey.

GREAT CIRCLE BEARINGS

FROM THE CENTER OF THE UNITED STATES

The table below shows the great circle bearing in degrees from the exact center of the United States to countries throughout the world having licensed radio amateurs. Where cities are shown the bearing to the nearest degree is given. These bearings were compiled from information supplied by the U. S. Coast and Geodetic Survey.

Prefix	Country	Bearing	Prefix	Country	Bearing	Prefix	Country	Bearing
AC3	SIKKIM	352	KL7	ALASKA, Anchorage	322	VK3	Melbourne	250
AC4	TIBET, Lhasa	350		Fairbanks	329	VK4	Brisbane	257
AG2	TRIESTE	41	KM6	MIDWAY ISLAND	288	VK5	Darwin	287
AP	PAKISTAN, Karachi	13	KP4	PUERTO RICO	117	VK6	Perth	274
AR8	LEBANON, Beyrouth	36	KP6	PALMYRA ISLAND	256	VK7	TASMANIA, Hobart	243
C	CHINA, Chungking	335	KR6	OKINAWA ISLAND	318	VK9	NORFOLK ISLAND	248
	Pekin	333	KS4	SWAN ISLAND	144		PAPUA TERRITORY, Port Moresby	277
	Shanghai	325	KS6	SAMOA	248	VO	NEWFOUNDLAND, St. John's	59
CE	CHILE, Santiago	156	KV4	VIRGIN ISLANDS	115	VPI	BRITISH HONDURAS	152
CM	CUBA, Havana	135	KW6	WAKE ISLAND	287	VP2	LEEWARD and WINDWARD ISLANDS	112
CN8	FRENCH MOROCCO, Casablanca	62	KX6	MARSHALL ISLANDS	276	VP3	BRITISH GUIANA, Georgetown	120
CP	BOLIVIA, La Paz	146	KZ5	CANAL ZONE	145	VP4	TRINIDAD	120
CR4	CAPE VERDE ISLANDS	87	LA	NORWAY, Oslo	29	VP5	JAMAICA	127
CR5	PORTUGUESE GUINEA	84	LI	LIBYA, Tripoli	51	VP6	BARBADOS ISLANDS	112
CR6	ANGOLA, Nova Lisboa	83	LU	ARGENTINA, Buenos Aires	147	VP7	BAHAMAS ISLANDS	121
CR7	MOZAMBIQUE, Lourenco Marques	85	LX	LUXEMBOURG	42	VP8	FALKLAND ISLANDS	156
	Mozambique	65	LZ	BULGARIA, Sofia	38		South Georgia Island	147
CR8	GOA	7	MB9	AUSTRIA, Vienna	38		South Orkney Islands	155
CR9	MACAU	327	MD1	CIRENAICA	46	VP9	BERMUDA	94
CR10	TIMOR ISLAND	295	MD2	TRIPOLITANIA	51	VQ1	ZANZIBAR	57
CT1	PORTUGAL, Lisbon	59	MD3	ERITREA, Asmara	44	VQ2	NORTHERN RHODESIA, Lusaka	77
CT2	AZORES ISLANDS	67	MD4	BRITISH SOMALILAND	40	VQ3	TANGANYIKA, Dar-Es-Salaam	59
CT3	MADERIA ISLANDS	68	MD5	SUEZ CANAL ZONE	40	VQ4	KENYA, Nairobi	56
CX	URUGUAY, Montevideo	145	MD6	IRAQ, Baghdad	30	VQ5	UGANDA	59
DL	GERMANY, Berlin	37	MD7	CYPRUS	37	VQ6	BRITISH SOMALILAND	40
DU	PHILIPPINE ISLANDS, Manila	316	MF2	TRIESTE (British)	41	VQ8	CHAGOS ISLANDS	14
EA	SPAIN, Madrid	54	M13	ERITREA, Asmara	44		Mauritius	51
EA6	BALEARIC ISLANDS	52	MP4	BAHRAIN ISLANDS and OMAN	28	VQ9	SEYCHELLES	38
EA8	CANARY ISLANDS	71	OA	PERU, Lima	153	VR1	GILBERT ISLANDS	267
EA9	SPANISH MOROCCO	59	OH	FINLAND, Helsinki	25	VR2	FJI ISLANDS	251
EI	IRELAND, Dublin	43	OE	AUSTRIA, Vienna	38	VR3	FANNING ISLAND	252
EK1	TANGIER ZONE	60	OK	CZECHOSLOVAKIA, Prague	38	VR4	SOLOMON ISLANDS	270
EL	LIBERIA, Monrovia	86	ON	BELGIUM, Brussels	41	VR5	TONGA ISLANDS	244
EP	IRAN, Tehran	23	OQ5	BELGIAN CONGO, Elisabethville	74	VR6	PITCAIRN ISLAND	208
ET	ETHIOPIA, Addis Ababa	48		Leopoldville	76	VS	MALAYA, Singapore	326
F	FRANCE, Paris	44		Stanleyville	65	VS4	BRITISH NORTH BORNEO	314
FA	ALGERIA, Algiers	54	OX	GREENLAND, Godthaab	34	VS5	BRUNEI and SARAWAK	316
FBS	MADAGASCAR, Antsirana	53	OY	FAEROES ISLANDS	34	VS6	HONG KONG	326
	Tananarive	63	OZ	DENMARK, Copenhagen	34	VS7	CEYLON	1
FG	CORSICA	46	PA	NETHERLANDS, Amsterdam	40	VS9	ADEN, Aden	39
FD8	TOGOLAND	77	PK	JAVA, Batavia	317	VU	INDIA, Bombay	8
FEB	FRENCH CAMEROONS	72	PK4	SUMATRA	328		Calcutta	351
FF8	FRENCH WEST AFRICA, Dakar	84	PK5	BORNEO	314		Delhi	3
FGB	GUADELOUPE	114	PK6	CELEBES ISLAND	305	VU4	LACCADIVE ISLANDS	9
FIB	FRENCH INDO CHINA, Saigon	328	PK7	NETHERLAND NEW GUINEA	290	VU5	ANDAMAN ISLANDS	345
FK8	NEW CALEDONIA, Noumea	254	PX	ANDORRA	50	XE	MEXICO, Mexico City	178
FL8	FRENCH SOMALILAND, Djibouti	42	PY	BRAZIL, Natal	112	XZ	BURMA, Rangoon	342
FMB	MARTINIQUE	117		Rio de Janeiro	129	YA	AFGHANISTAN, Kandahar	13
F08	FRENCH OCEANIA, Tahiti	229	PZ	SURINAM, (Netherland Guiana)	121	YI	IRAQ, Baghdad	30
FP8	MIQUELON and ST. PIERRE IS.	64	SM	SWEDEN, Stockholm	29	YJ	NEW HEBRIDES	260
FQ8	FRENCH EQUATORIAL AFRICA	65	SP	POLAND, Warsaw	33	YK	SYRIA	34
FR8	REUNION ISLAND	55	ST	ANGLO-EGYPTIAN SUDAN, Khartoum	49	YN	NICARAGUA	150
FT4	TUNISIA, Tunis	50	SU	EGYPT, Cairo	41	YO	ROMANIA, Bucharest	36
FU8	NEW HEBRIDES	259	SV	GREECE, Athens	41	YS	SALVADOR, San Salvador	156
FY8	FRENCH GUIANA, Cayenne	117	SV5	DODECANESE ISLANDS	40	YT	YUGOSLAVIA, Belgrade	39
G	ENGLAND, London	43	TA	TURKEY, Ankara	35	YV	VENEZUELA, Caracas	126
GC	CHANNEL ISLANDS	45	TF	ICELAND, Reykjavik	35	ZA	ALBANIA, Tirana	41
GD	ISLE OF MAN	41	TG	GUATEMALA, Guatemala City	161	ZB1	MALTA	48
GI	NORTHERN IRELAND, Belfast	42	TI	COSTA RICA	150	ZB2	GIBRALTAR	58
GM	SCOTLAND, Glasgow	40	TR	LIBYA, Tripoli	51	ZC1	TRANSJORDAN	36
GW	WALES	43	TT	TANNU TUVA, Kyzyl Khot	351	ZC2	COCOS ISLANDS	327
HA	HUNGARY, Budapest	37	U	SOVIET UNION, Moscow	23	ZC3	CHRISTMAS ISLAND	315
HB	SWITZERLAND, Bern	43	UB5	UKRAINE	30	ZC4	CYPRUS	37
HC	ECUADOR, Quito	148	UC5	WHITE RUSSIA	25	ZD1	SIERRA LEONE, Freetown	81
HCB	GALAPAGOS ISLANDS	167	UD6	AZERBAIJAN	23	ZD2	NIGERIA, Lagos	76
HE1	LEICHTENSTEIN	43	UF6	GEORGIA	28	ZD3	GAMBIA	84
HH	HAITI, Port-au-Prince	124	UG6	ARMENIA	26	ZD4	GOLD COAST, Accra	80
HI	DOMINICAN REPUBLIC	122	UH8	TURKOMAN	19	ZD6	NYASALAND	69
HK	COLOMBIA, Bogota	140	UI8	UZBEK	12	ZD7	ST. HELENA	100
HM	KOREA, Seoul	324	UJ8	TADZHIK	7	ZD8	ASENCION ISLAND	99
HP	PANAMA	145	UL7	KAZAKH	10	ZD9	TRISTAN da CUNHA	122
HR	HONDURAS	152	UM8	KIRGHIZ	5	ZE	SOUTHERN RHODESIA, Salisbury	77
HS	SIAM, Bangkok	336	UN1	KARELO-FINNISH REPUBLIC	20	ZK1	COOK ISLANDS	234
HY	VATICAN CITY	45	UD5	MOLDAVIA	32	ZK2	NIUE	242
HZ	SAUDI ARABIA	34	UP	LITHUANIA	30	ZL1	NEW ZEALAND, Auckland	238
I	ITALY, Rome	45	UQ	LATVIA	29	ZL2	Wellington	234
IS	SARDINIA	48	UR	ESTONIA	27	ZL3	Christchurch	233
JA	JAPAN, Tokyo	315	VE1	CANADA, Halifax	68	ZL4	Dunedin	231
KB6	BAKER ISLAND	262	VE2	Montreal	64	ZM6	SAMOA (British)	248
KCB	CAROLINE ISLANDS	260	VE3	Toronto	77	ZP	PARAGUAY, Asuncion	141
KGB	GUANTANAMO BAY, Cuba	126	VE4	Winnipeg	10	ZS	UNION OF SOUTH AFRICA, Capetown	104
KGB	GUAM	297	VE5	Saskatoon	339		Durban	91
KGB1	IWO JIMA ISLAND	317	VE6	Edmonton	330		Johannesburg	89
KGBS	SAIPAN ISLAND	297	VE7	Vancouver	303	ZS3	SOUTH WEST AFRICA, Windhoek	92
KGBT	TINIAN ISLAND	297	VE8	Fort Nelson	333	ZS7	SWAZILAND	87
KH6	HAWAIIAN ISLANDS, Honolulu	267	VK1	HEARD ISLAND	163	ZS8	BASUTOLAND	93
KJB	JOHNSTON ISLAND	270	VK2	AUSTRALIA, Sydney	252	ZS9	BECHUANALAND	87

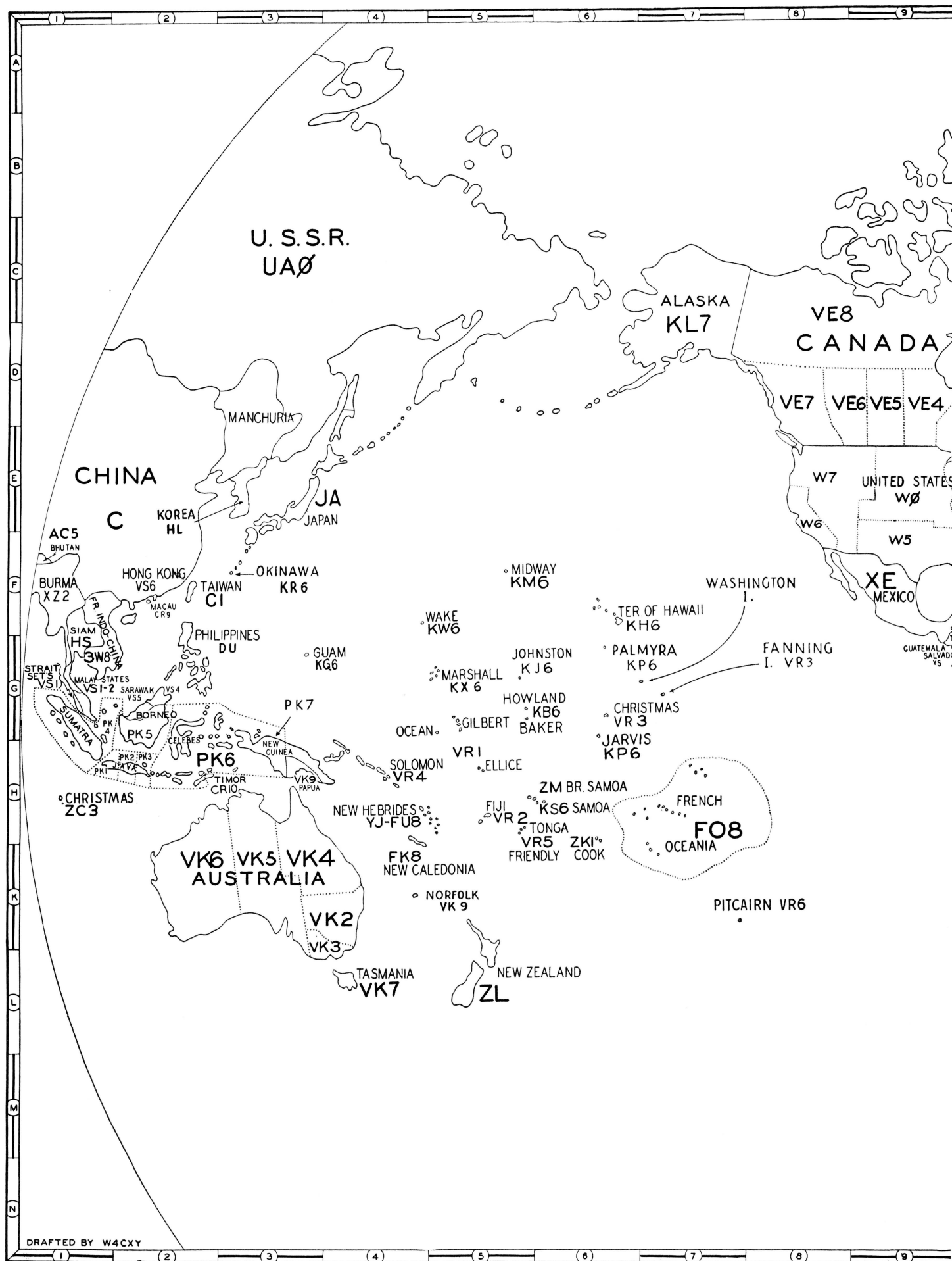
GREAT CIRCLE BEARINGS IN THE UNITED STATES

	ATLANTA, GA.	BIRMINGHAM, ALA.	BISMARCK, N. D.	BOSTON, MASS.	BUFFALO, N. Y.	CHARLESTON, W. VA.	CHEYENNE, WYO.	CHICAGO, ILL.	CLEVELAND, OHIO	COLUMBIA, S. C.	DALLAS, TEXAS	DENVER, COLORADO	DES MOINES, IOWA	DETROIT, MICH.	EL PASO, TEXAS	HELENA, MONTANA	HOUSTON, TEXAS	INDIANAPOLIS, IND.	JACKSONVILLE, FLA.	KANSAS CITY, MO.	LITTLE ROCK, ARK.	LOS ANGELES, CALIF.	LOUISVILLE, KY.	MIAMI, FLORIDA	MILWAUKEE, WIS.	MINNEAPOLIS, MINN.	NASHVILLE, TENN.	NEW ORLEANS, LA.	NEW YORK, N. Y.	NORFOLK, VA.	PHILADELPHIA, PA.	PHOENIX, ARIZONA	PITTSBURGH, PA.	ST. LOUIS, MO.	SALT LAKE CITY, UTAH	SAN FRANCISCO, CALIF.	SEATTLE, WASHINGTON	WASHINGTON, D. C.	WILMINGTON, N. C.
ATLANTA, GA.		264	322	47	24	25	371	343	15	86	269	297	320	7	271	310	251	347	145	306	281	281	347	154	345	331	321	234	48	64	48	278	27	318	296	289	308	48	84
BIRMINGHAM, ALA.	82		326	50	31	40	304	356	26	84	268	299	328	17	270	312	246	5	125	314	287	281	10	142	355	338	0	219	52	67	53	278	37	333	298	290	309	53	83
BISMARCK, N. D.	132	137		92	97	115	209	114	105	124	167	205	133	104	198	273	165	119	132	148	150	233	123	135	109	108	131	151	99	111	102	217	106	134	237	249	282	107	119
BOSTON, MASS.	236	241	291		277	247	278	273	267	226	254	275	275	274	262	293	246	263	220	268	253	273	256	207	278	286	249	237	235	219	233	268	258	262	280	280	295	236	217
BUFFALO, N. Y.	208	217	291	92		206	273	264	237	192	241	269	268	261	252	290	231	243	191	258	237	267	231	184	274	286	225	219	118	160	134	261	199	248	276	276	293	159	174
CHARLESTON, W. VA.	208	223	307	61	24		287	309	359	174	251	282	293	345	260	300	238	293	180	279	251	274	270	174	316	311	245	223	66	108	71	269	31	275	286	282	301	80	143
CHEYENNE, WYO.	108	112	26	76	76	91		81	81	103	140	187	83	79	189	319	143	90	113	101	119	241	95	119	76	62	104	128	81	92	83	219	84	98	268	262	303	87	100
CHICAGO, ILL.	161	175	302	82	78	125	272		93	144	221	266	268	80	242	293	210	151	155	245	208	262	157	156	350	308	173	190	91	116	97	254	101	212	274	272	295	106	131
CLEVELAND, OHIO	197	209	297	80	55	179	277	277		176	240	272	275	310	252	293	228	245	180	261	235	268	226	175	290	296	219	214	95	136	105	262	127	250	278	277	296	124	156
COLUMBIA, S. C.	268	267	317	41	10	354	299	329	356		270	295	311	350	271	308	256	326	189	300	279	282	320	174	331	323	297	246	39	53	37	279	7	305	295	290	307	33	85
DALLAS, TEXAS	81	82	349	57	49	61	325	36	50	80		319	15	45	266	325	157	47	97	15	61	280	55	112	32	11	65	115	60	71	61	277	55	40	308	291	315	63	80
DENVER, COLORADO	103	107	22	73	72	87	6	75	77	99	134		74	74	189	325	138	84	109	91	112	246	90	116	70	55	98	124	78	88	80	224	80	91	283	267	308	83	96
DES MOINES, IOWA	134	144	318	80	78	105	271	84	87	123	197	262		81	231	297	187	105	135	197	171	257	116	141	69	5	133	165	87	104	91	247	92	137	273	270	296	97	115
DETROIT, MICH.	188	200	295	86	79	164	273	263	129	168	233	268	268		248	291	222	224	174	254	227	265	208	171	282	292	206	207	100	133	109	258	128	238	275	274	294	124	151
EL PASO, TEXAS	77	78	14	58	54	64	8	50	56	76	79	8	42	53		345	98	57	86	48	71	285	62	97	46	33	68	92	61	69	62	290	59	57	335	298	327	64	75
HELENA, MONTANA	112	116	85	84	88	100	133	97	93	108	134	141	105	92	162		136	101	115	115	122	203	105	119	94	91	111	127	89	98	92	180	94	109	179	224	283	95	104
HOUSTON, TEXAS	64	60	348	50	40	49	329	25	39	67	338	325	6	34	285	327		34	84	3	26	288	40	103	22	5	46	86	52	60	53	289	45	24	314	297	319	5	68
INDIANAPOLIS, IND.	166	185	308	72	58	110	281	332	62	143	234	276	290	41	250	298	220		157	267	226	267	168	158	338	316	188	199	80	107	85	261	80	251	281	277	298	94	127
JACKSONVILLE, FLA.	327	339	324	33	9	1	308	339	0	8	286	304	323	355	282	314	273	340		314	300	288	338	163	341	332	326	271	29	34	28	287	8	323	303	295	312	23	39
KANSAS CITY, MO.	120	129	332	72	67	90	288	60	73	111	196	278	15	66	236	306	184	82	126		157	262	95	134	50	9	113	157	78	93	81	253	79	97	282	275	302	85	105
LITTLE ROCK, ARK.	97	104	335	59	48	65	307	26	48	92	243	300	352	41	260	315	208	43	114	338		276	55	128	21	356	71	158	62	76	64	271	56	22	297	286	309	67	89
LOS ANGELES, CALIF.	81	82	41	62	61	70	52	62	65	79	88	57	60	62	100	19	96	67	87	67	81		70	94	59	52	76	92	65	71	66	95	67	69	35	319	348	68	78
LOUISVILLE, KY.	166	190	313	66	47	87	287	339	43	137	242	282	301	26	256	302	227	348	156	280	239	271		158	342	322	202	205	71	98	75	266	63	278	285	281	301	82	120
MIAMI, FLORIDA	337	326	329	22	3	355	313	342	356	355	302	310	329	353	291	318	290	342	345	321	315	293	341		342	335	334	298	18	16	15	293	1	330	308	299	315	11	13
MILWAUKEE, WIS.	162	175	297	87	88	132	267	170	107	147	218	261	253	99	239	290	207	157	156	235	204	259	160	157		298	172	188	98	121	103	251	111	203	271	270	293	113	135
MINNEAPOLIS, MINN.	145	154	291	91	96	123	248	125	108	135	193	242	184	105	227	283	186	132	144	189	175	248	137	146	114		148	169	99	116	104	237	110	159	259	261	287	111	127
NASHVILLE, TENN.	140	180	320	59	40	61	295	354	36	114	251	290	318	24	261	307	231	8	142	298	254	275	22	150	353	333		205	63	83	65	271	50	313	291	285	305	68	103
NEW ORLEANS, LA.	50	37	337	46	32	38	318	9	28	60	299	313	347	22	283	321	270	17	86	339	339	288	22	114	7	351	23		46	56	47	287	35	359	308	296	315	47	64
NEW YORK, N. Y.	233	240	296	54	303	251	281	281	280	223	255	278	280	286	262	294	244	269	213	271	253	274	259	202	287	293	251	237		205	229	269	269	266	283	282	297	235	208
NORFOLK, VA.	249	253	306	35	342	291	290	303	319	236	264	286	295	318	268	301	253	294	217	285	267	279	284	198	308	307	269	244	25		16	274	322	284	289	286	302	343	208
PHILADELPHIA, PA.	233	240	298	52	317	255	283	285	289	221	255	279	283	294	263	296	246	273	212	273	255	275	263	199	292	296	252	235	49	197		270	279	269	284	282	298	235	203
PHOENIX, ARIZONA	80	83	29	61	59	69	35	58	62	79	89	40	55	59	108	0	100	64	89	62	80	277	70	97	55	45	74	93	64	72	66		64	66	1	300	334	68	79
PITTSBURGH, PA.	210	221	300	72	18	213	280	286	308	188	246	276	281	310	257	295	235	264	189	268	244	271	246	181	296	299	234	222	85	140	96	265		261	281	279	297	123	165
ST. LOUIS, MO.	134	150	320	70	60	90	287	30	63	119	224	280	319	53	248	303	207	68	137	280	204	267	94	143	20	342	130	179	75	95	79	260	74		284	278	301	84	110
SALT LAKE CITY, UTAH	99	101	50	73	74	86	83	79	78	95	118	98	80	76	152	359	123	84	103	91	104	220	88	109	75	67	95	114	78	86	80	181	80	90		254	315	83	92
SAN FRANCISCO, CALIF.	86	86	54	66	67	75	70	70	70	83	96	75	70	68	109	39	101	73	90	77	88	136	77	96	67	62	81	97	69	76	71	114	71	77	66		1	73	81
SEATTLE, WASHINGTON	103	105	87	81	84	94	111	92	89	100	118	116	97	88	136	96	120	95	105	103	109	165	97	109	90	88	102	114	85	92	87	147	89	100	128	181		90	97
WASHINGTON, D. C.	233	240	302	52	342	263	285	293	307	215	256	281	287	308	263	298	245	280	205	277	257	275	268	192	300	302	254	235	53	163	53	270	305	273	285	283	300		

GREAT CIRCLE BEARINGS FROM THE UNITED STATES TO VARIOUS WORLD WIDE METROPOLITAN AREAS

	AMSTERDAM, HOLLAND	ANCHORAGE, ALASKA	ASUNCION, PARAGUAY	AUCKLAND, NEW ZEALAND	BOGOTA, COLOMBIA	BOMBAY, INDIA	BERN, SWITZERLAND	BRUSSELS, BELGIUM	BUENOS AIRES, ARGENTINA	CAIRO, EGYPT	CAPETOWN, SOUTH AFRICA	CARACAS, VENEZUELA	COPENHAGEN, DENMARK	GUATEMALA CITY, GUATEMALA	HAVANA, CUBA	HELSINKI, FINLAND	HONOLULU, T. H.	JOHANNESBURG, SOUTH AFRICA	LA PAZ, BOLIVIA	LIMA, PERU	LONDON, ENGLAND	MADRID, SPAIN	MANILA, PHILIPPINE ISLANDS	MEXICO CITY, MEXICO	MONTEVIDEO, URUGUAY	MONTREAL, CANADA	OSLO, NORWAY	PARIS, FRANCE	PRAGUE, CZECHOSLOVAKIA	QUITO, ECUADOR	RIO DE JANEIRO, BRAZIL	ROME, ITALY	SAN JOSE, COSTA RICA	SANTIAGO, CHILE	SHANGHAI, CHINA	SINGAPORE, MALAYA	STOCKHOLM, SWEDEN	SYDNEY, AUSTRALIA	TOKYO, JAPAN
ATLANTA, GA.	43	325	153	242	160	26	48	45	158	51	114	141	38	198	170	30	280	102	160	170	45	58	329	227	156	32	34	47	42	170	139	51	179	168	336	346	33	254	324
BIRMINGHAM, ALA.	42	325	151	241	155	23	47	44	156	50	113	137	37	191	158	29	279	101	157	167	44	57	327	221	154	36	33	47	42	165	137	50	173	166	334	342	32	253	323
BISMARCK, N. D.	42	315	141	240	143	7	45	43	146	40	97	131	35	162	142	27	261	81	146	154	45	56	317	177	145	84	33	46	39	151	129	46	153	155	325	328	30	256	314
BOSTON, MASS.	51	321	167	253	186	36	56	53	169	60	117	172	45	217	210	36	284	105	177	187	53	68	346	235	168	331	40	56	50	191	153	59	205	181	349	7	39	270	335
BUFFALO, N. Y.	49	320	160	250	172	29	53	51	163	55	112	159	42	203	189	34	279	99	168	178	51	65	338	222	161	54	38	53	47	179	146	56	189	173	342	356	37	266	329
CHARLESTON, W. VA.	46	322	156	246	167	28	50	47	160	53	113	151	40	201	183	32	279	101	164	174	48	61	334	224	159	37	36	50	45	175	143	53	185	170	339	351	35	259	327
CHEYENNE, WYO.	38	322	138	236	135	3	41	40	143	37	100	122	32	151	127	24	263	84	141	148	41	52	312	166	142	69	30	42	36	143	126	42	144	152	322	321	27	250	312
CHICAGO, ILL.	45	320	152	245	158	21	49	47	156	49	108	144	39	186	165	31	274	95	158	167	48	60	328	207	154	66	36	50	44	167	138	51	173	166	335	343	34	260	323
CLEVELAND, OHIO	47	320	157	247	167	27	52	49	161	53	111	153	41	198	182	33	278	99	165	174	50	63	334	219	159	53	37	52	46	175	143	54	184	171	340	352	36	263	327
COLUMBIA, S. C.	44	324	156	243	166	29	49	46	161	53	115	148	39	206	186	31	281	103	164	175	46	59	333	232	159	24	35	48	44	175	142	52	187	171	339	352	34	255	327
DALLAS, TEXAS	39	326	142	237	138	12	43	41	148	44	110	122	34	161	123	26	274	97	146	154	42	53	317	189	147	48	31	43	38	149	130	45	150	157	326	326	29	249	317
DENVER, COLORADO	38	323	137	235	133	2	41	39	143	37	101	120	32	149	124	24	264	85	141	147	41	52	312	164	142	66	29	42	35	142	125	42	142	152	321	320	27	249	312
DES MOINES, IOWA	43	320	146	242	149	15	47	44	151	45	105	135	37	173	149	28	270	90	152	160	46	58	323	194	150	68	34	47	41	158	134	48	162	161	330	335	32	256	319
DETROIT, MICH.	47	320	156	247	166	25	51	49	160	52	110	151	41	195	178	32	277	97	163	173	50	63	333	216	159	62	37	52	46	173	142	54	182	169	339	350	35	263	326
EL PASO, TEXAS	36	329	135	233	125	1	39	37	142	37	108	111	30	136	106	22	270	94	137	142	38	49	308	150	140	52	27	40	34	135	124	41	131	149	319	313	25	245	312
HELENA, MONTANA	36	318	133	233	130	355	39	38	138	31	89	119	30	144	124	22	252	71	136	142	39	49	308	154	137	78	28	40	33	138	121	39	138	147	317	316	25	249	307
HOUSTON, TEXAS	39	328	143	237	137	15	43	41	149	45	113	120	34	162	116	26	277	100	147	154	41	53	317	199	147	41	30	43	38	149	130	46	150	158	327	326	29	247	318
INDIANAPOLIS, IND.	45	321	153	244	160	23	49	47	157	50	110	144	39	190	168	31	276	97	160	169	47	60	329	212	155	54	35	49	43	168	139	52	176	167	336	345	34	259	324
JACKSONVILLE, FLA.	42	326	155	242	163	30	48	44	160	53	117	142	37	209	185	30	283	105	163	173	44	57	331	239	158	20	33	47	42	174	141	51	187	170	338	350	33	251	326
KANSAS CITY, MO.	42	322	145	240	146	14	45	43	151	45	107	132	36	171	143	28	271	93	151	159	44	56	321	193	149	61	33	46	40	156	133	47	159	160	329	333	31	254	319
LITTLE ROCK, ARK.	41	325	146	240	147	17	45	43	152	47	111	130	36	175	141	28	275	98	152	160	43	56	322	203	150	47	32	45	40	157	134	48	161	161	330	334	31	252	320
LOS ANGELES, CALIF.	31	333	127	228	116	347	34	33	135	28	102	104	26	121	100	18	260	84	128	132	34	44	300	126	134	58	24	35	28	124	117	34	119	141	312	303	21	241	306
LOUISVILLE, KY.	44	322	153	244	160	23	49	46	157	50	111	144	39	191	168	30	277	98	160	169	47	60	329	215	156	47	35	49	43	168	139	51	176	167	336	345	33	257	324
MIAMI, FLORIDA	41	328	155	240	163	33	47	43	160	54	118	138	37	223	217	30	285	108	163	175	43	56	331	254	158	13	33	46	42	176	140	50	194	171	339	351	32	247	327
MILWAUKEE, WIS.	45	319	152	245	158	20	50	47	156	49	107	145	39	185	165	31	273	94	158	167	48	61	328	205	154	72	36	50	44	166	138	52	173	165	335	343	34	261	323
MINNEAPOLIS, MINN.	44	317	147	243	152	15	48	46	152	46	103	139	38	175	154	29	270	90	153	161	47	59	324	193	150	81	35	49	42	160	134	49	164	161	331	337	33	259	319
NASHVILLE, TENN.	43	323	151	242	157	23	48	45	156	50	112	140	38	190	162	30	277	99	158	167	46	58	328	216	155	43	34	48	42	166	138	50	174	166	335	343	33	255	324
NEW ORLEANS, LA.	40	327	147	239	146	21	45	42	153	48	114	127	35	182	133	28	279	102	152	161	43	55	322	220	151	35	32	45	40	158	135	48	163	162	331	334	30	249	321
NEW YORK, N. Y.	49	321	164	251	180	34	54	51	167	58	116	166	43	214	204	35	283	104	173	184	51	66	343	233	165	4	39	54	48	187	150	57	199	177	346	3	38	266	333
NORFOLK, VA.	46	323	161	247	176	33	51	48	165	56	116	160	41	213	203	33	283	104	170	181	48	62	339	235	163	12	36	51	46	184	147	55	197	175	344	0	36	260	331
PHILADELPHIA, PA.	48	322	163	249	178	33	53	50	166	57	115	164	42	212	202	34	282	103	172	182	50	65	341	232	164	11	38	53	48	185	149	56	197	176	345	2	37	264	332
PHOENIX, ARIZONA	34	330	131	231	121	354	37	35	138	33	105	108	28	129	104	20	265	89	133	138	36	47	304	137	137	56	26	38	31	130	121	38	126	146	316	308	23	243	309
PITTSBURGH, PA.	47	321	158	247	170	29	52	49	162	54	113	155	41	203	187	33	279	100	167	176	49	63	336	224	160	41	37	52	46	178	145	55	188	172	341	354	36	262	329
ST. LOUIS, MO.	43	322	149	242	153	19	47	45	154	48	109	137	37	181	156	29	274	96	155	164	46	58	325	204	152	55	34	47	42	162	136	49	167	163	332	339	32	256	321
SALT LAKE CITY, UTAH	35	325	132	232	127	355	38	36	139	32	96	114	29	138	116	21	258	79	135	141	38	48	307	149	136	67	27	39	32	135	121	38	134	146	317	313	24	247	308
SAN FRANCISCO, CALIF.	30	333	125	226	115	343	32	31	132	24	95	104	24	121	101	16	252	74	126	130	33	42	298	126	131	62	22	33	26	123	115	32	119	139	310	301	19	240	303
SEATTLE, WASHINGTON	31	321	125	227	120	345	33	32	131	23	79	110	25	131	113	17	240	58	128	133	34	43	300	138	130	75	24	35	27	128	113	32	127	139	309	306	20	243	301
WASHINGTON, D. C.	47	322	161	248	175	32	52	49	164	56	115	160	41	210	198	33	282	103	170	180	49	63	339	231	163	20	37	52	47	182	147	55	194						

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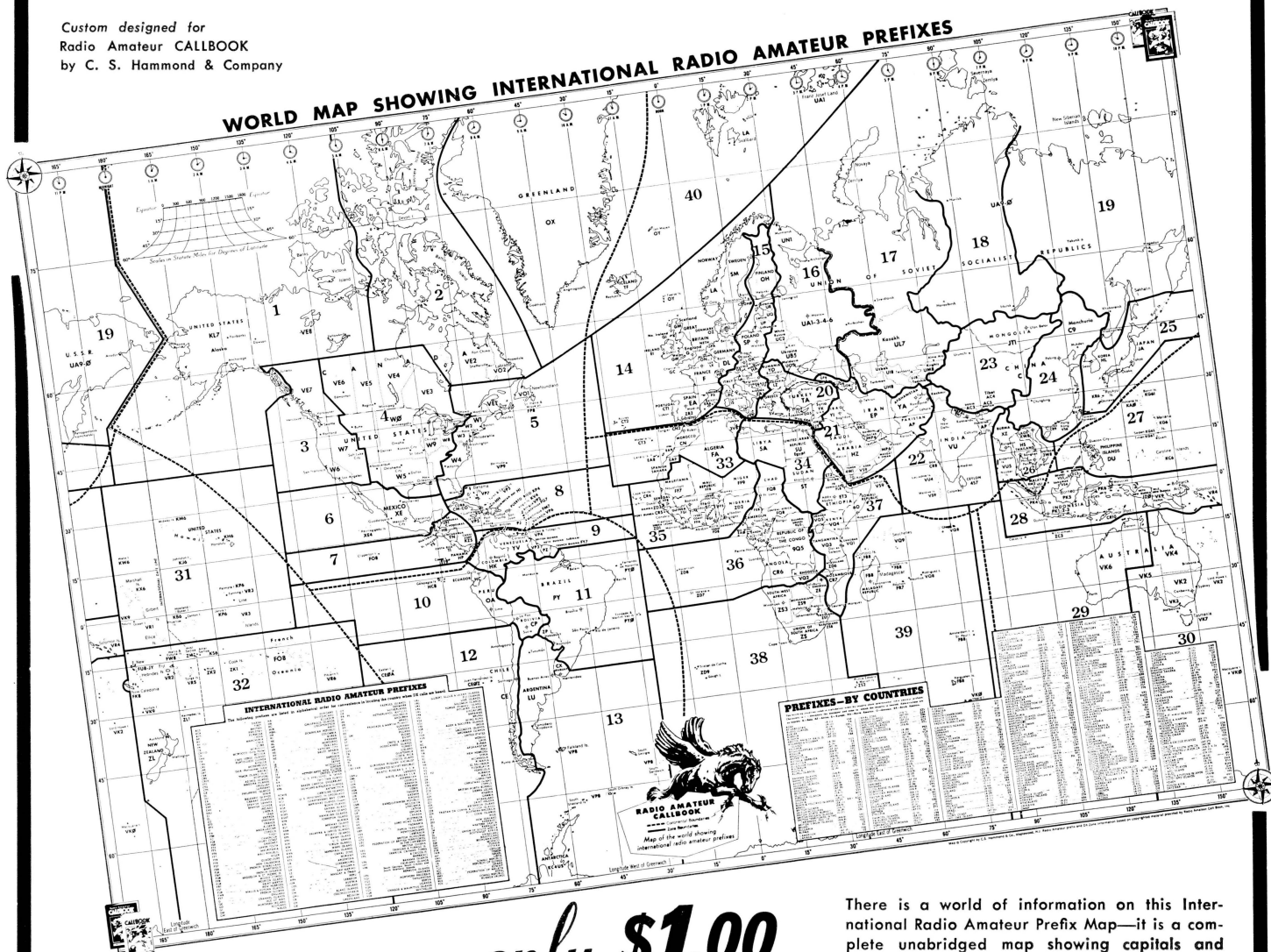


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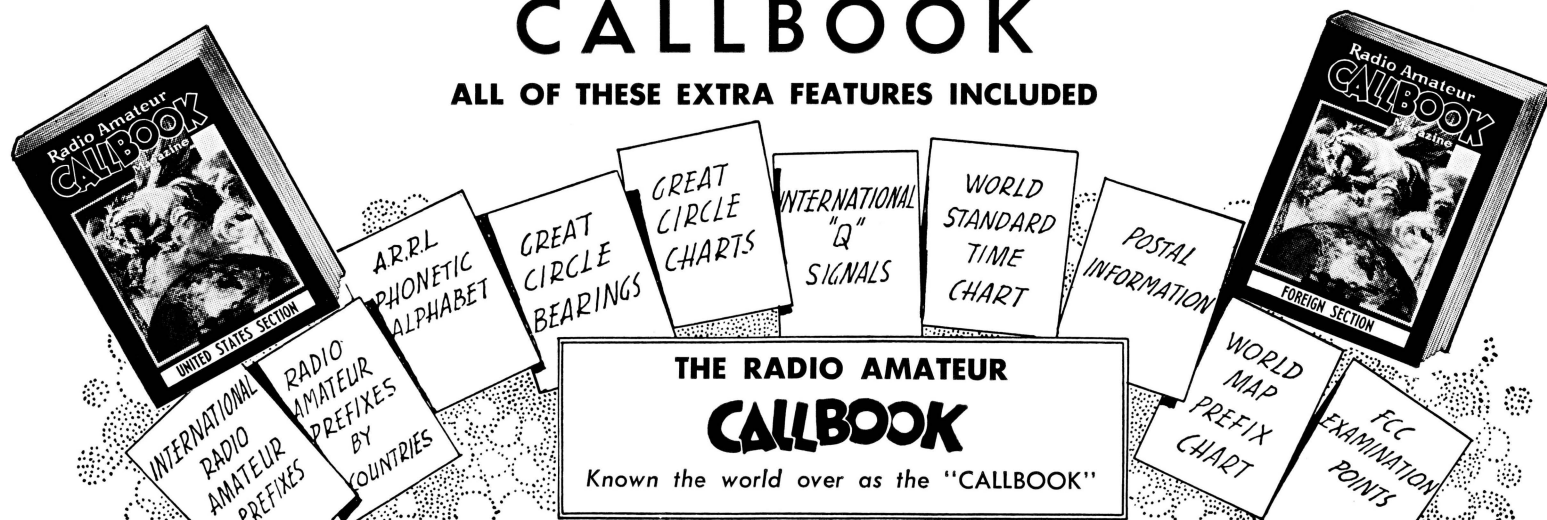
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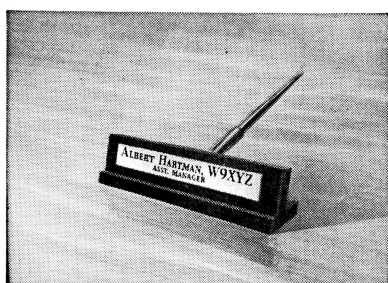
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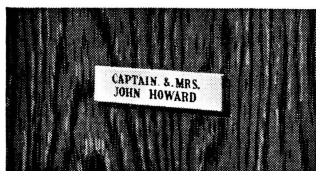


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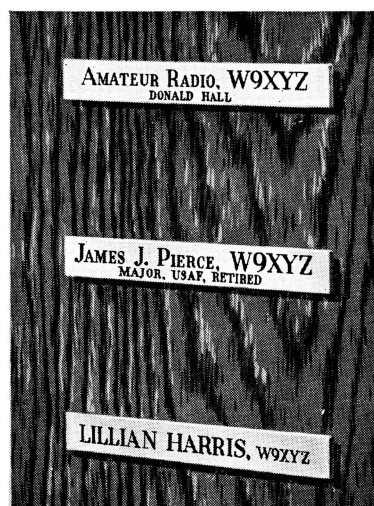
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